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# The CHEMIST AND DRUGGIST

for RETAILER - WHOLESALE - MANUFACTURER

Established 1859

28 Essex Street, Strand, London, W.C.2

Registered as a Newspaper

No. 3105  
VOL. CXXXI

AUGUST 12, 1939

Annual Subscription (with  
Diary) 20/- Single Copies 9d.

HOT WATER BOTTLES, AND —  
*they sell like*  
*hot cakes!*

Dunlop Hot Water Bottles enjoy a popularity shared by no others. Their known dependability and their unique combination of supreme quality with low price place them beyond all competition. For sure, swift sale—see especially Dunlop models retailing at 2/11 and 3/3. But there are Dunlop Bottles for every class of trade.

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Size	Red	White	Size	Red	White
6 in. x 10 in.	4/11	4/6	8 in. x 12 in.	6/6	5/6
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**DUNLOP MOULDED FABRIC INSERTION BOTTLE** - - - In Red only - 4/6

And remember the Irresistible **ANIMAL** Series for Children at 3/11, 4/6 and 5/9.



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(Illustrated.)

Fixed retail price 2/11  
With handle - 3/3

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9HWB5/6

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EDUCATIONAL NUMBER

# ADMIN

## NEW SCIENTIFIC FOOD-SUPPLEMENT FOR DOGS

*A profitable line that will bring you new customers and make them regular customers.*

A large volume of extra sales will be secured if you display and recommend 'Admin.' This new development in the science of dog nutrition is of vital importance to every dog owner. A small packet lasts the average dog about a week, so that customers come regularly and buy other lines you display as well. 'Admin' is being sold only through chemists and dog shops.

### DOG OWNERS WILL DEMAND 'ADMIN'

The diet of practically every dog is deficient—often sadly deficient—in mineral salts and vitamins. An ordinary diet does not supply the essential elements a dog gets when devouring, say, the liver and guts of a rabbit. Most dogs therefore need a food-supplement to balance their diet—and that need is now adequately supplied for the first time by 'Admin.' The final formula has been found only after exhaustive tests.

### A PHARMACEUTICAL PRODUCT

In every way 'Admin' comes up to your very high standards. Each pound contains 15,625 international units of vitamin A; 3,906 i.u. of vitamin D, and 2,510 of vitamin B.1; and proportional amounts of the rest of the vitamin B-complex and vitamin E. It supplies also the optimum quantities and proportions of essential mineral salts—assimilable calcium, phosphorus, iron, copper, manganese and iodine. Added to a dog's ordinary food it will prevent all 'deficiency' disorders and increase resistance to disease.

★ ★ ★ ★ ★

P.S. The Cooper Health Routine, devised by the Cooper Research Bureau is more effective still with 'Admin.' The soundest advice is to give Pulvex once a week to blot out the dog flea and all flea-borne parasites and so to minimise the risk of tapeworm infection; and to give 'Admin' every day to look after the rest. At the moment most of the announcements in dog papers are spreading the good news of 'Admin', but Pulvex will soon be back in the limelight again.



### Extra Sales with DOG COUNTER

A special counter displaying well-designed 'Admin' cartons, tins and booklets will catch the eye of any dog owner. The booklets outline fully the problems of dog nutrition and the vital need for a food-supplement such as 'Admin.' The dog counter will give you an opportunity to talk to your customers about their dogs, and secure their lasting goodwill.

### ADMIN Perfected by the Cooper Research Bureau

is packed in 6d. and 1/6 cartons—a week's supply and a month's for the average dog—and 7/6 tins (seven times the 1/6 quantity). Trade terms—less 33½% and 5% cash monthly on the cartons, and less 25% and 5% cash monthly on 7/6 tins.



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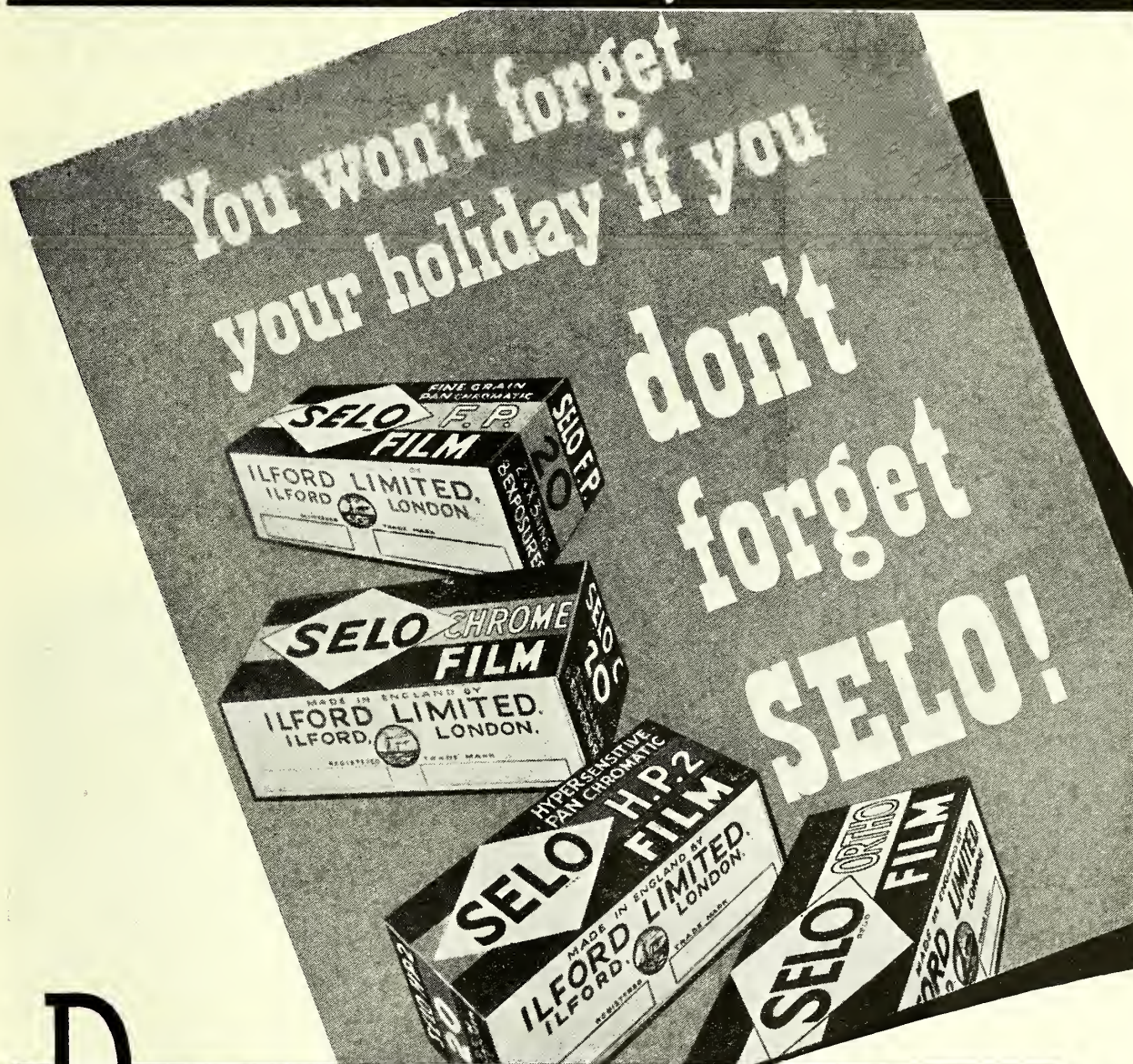
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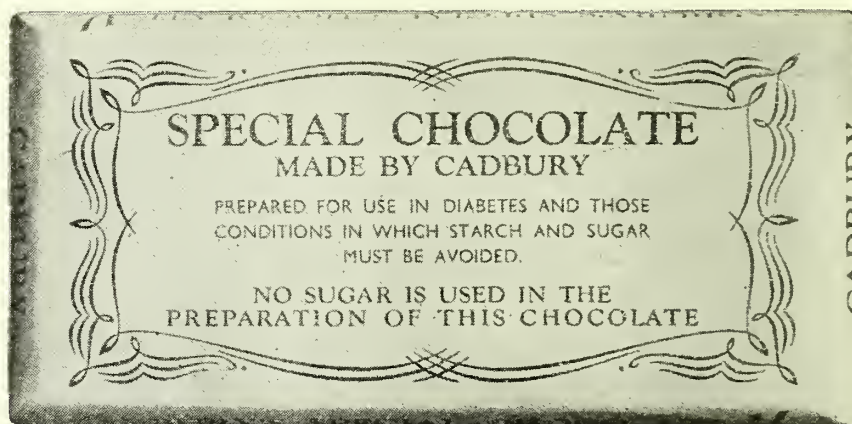
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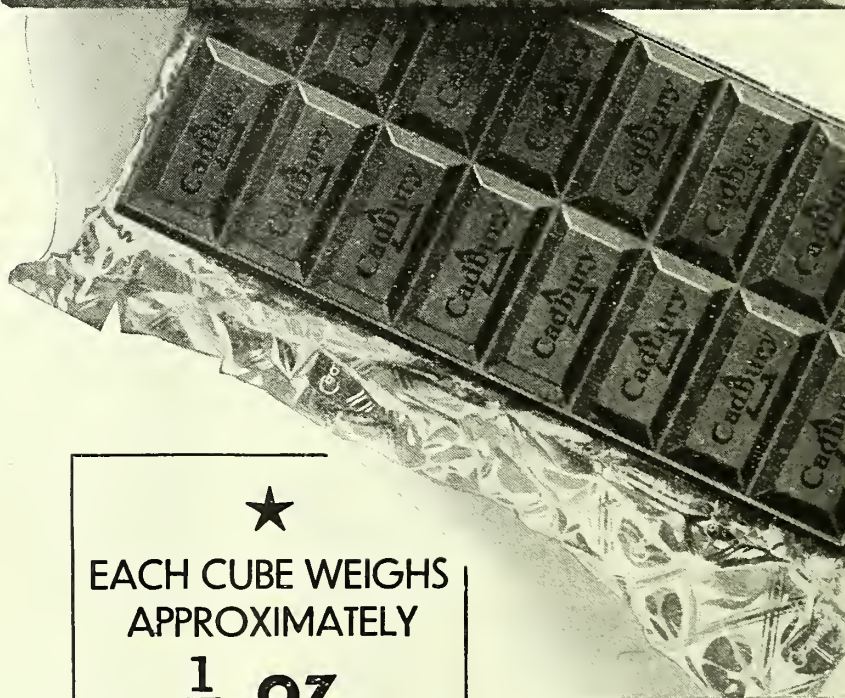
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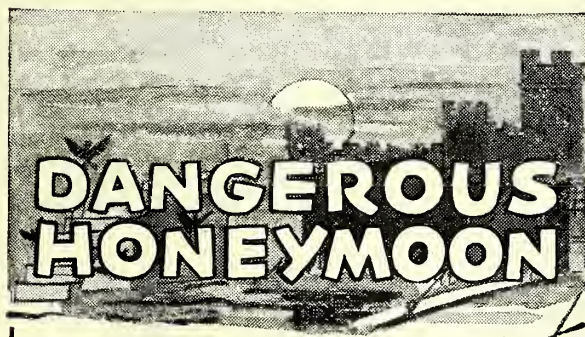
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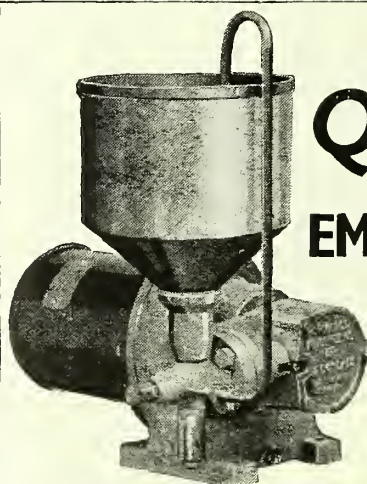
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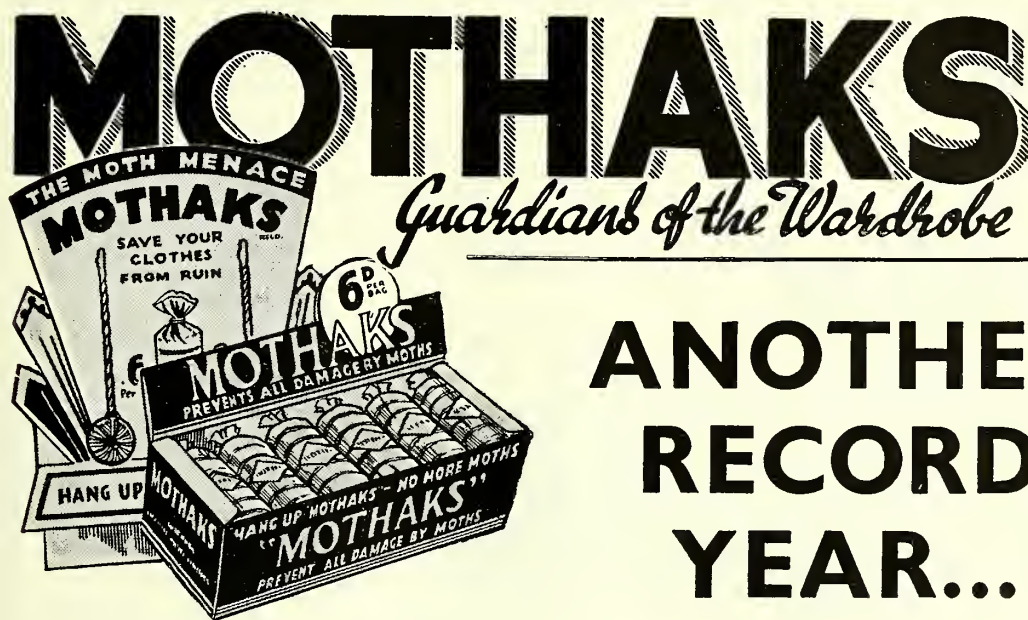
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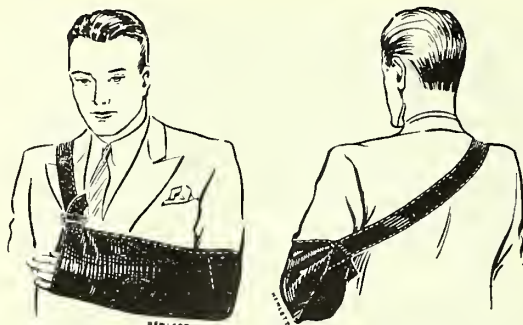
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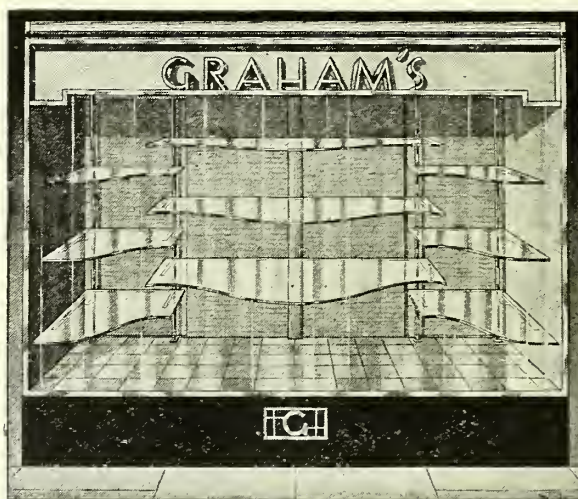
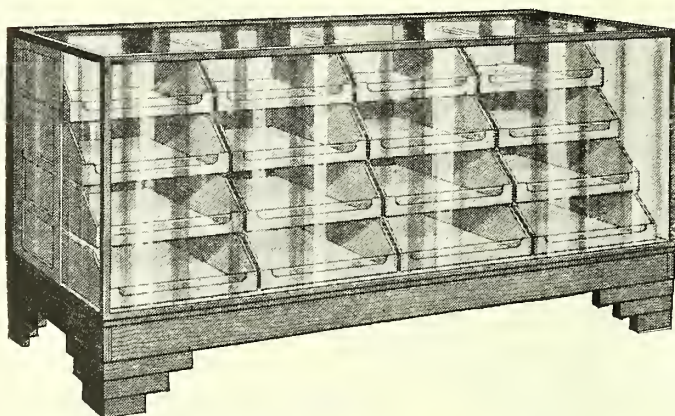
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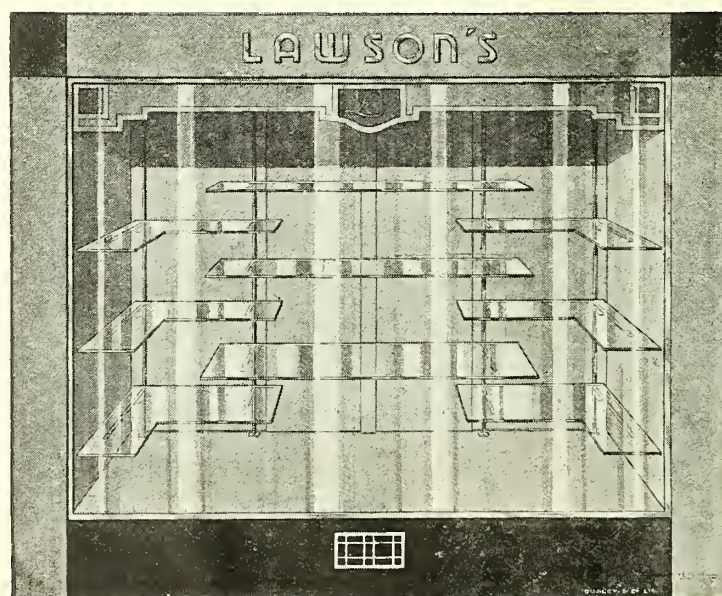
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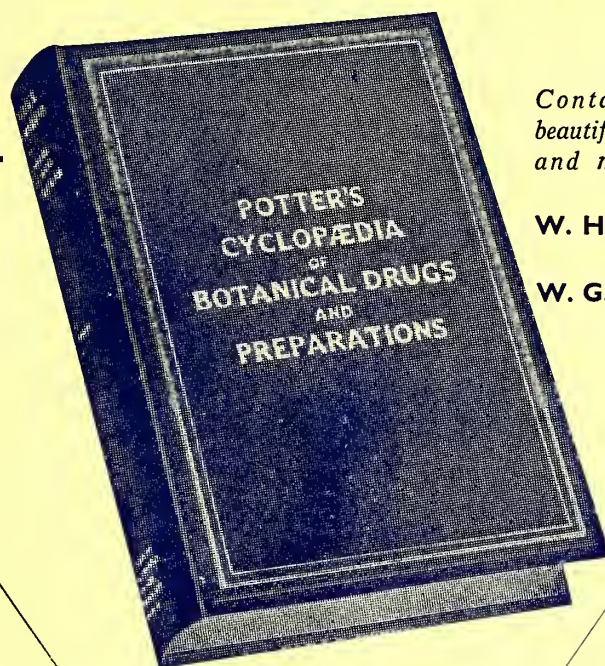
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H. LAMBOURNE, M.A., M.Sc., F.I.C.  
Session 1939-40A full-time Course in Chemistry, Biology and  
Physics is provided for the Preliminary  
Scientific Examination of the Phar-  
maceutical Society.*The SESSION COMMENCES on 19th SEPTEMBER*

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This course is identical with the Intermediate B.Sc. Course in Chemistry, Physics and Biology. Students are recommended to enter for the University Intermediate B.Sc. Examination which, if passed, carries with it exemption from the Preliminary Scientific Examination. A student can then decide to take either a further year for the C. & D. qualification or two years for the B.Sc. degree.

## THE CHEMIST AND DRUGGIST AND PHARMACEUTICAL CHEMIST COURSES

These are open to Students who have passed the Preliminary Scientific Examination or its equivalent. The nine months' Course for the Chemist and Druggist Qualifying Examination commences in October each year. **Composition Fee: 30½ Guineas per session**, plus incidental fees and deposits. A two years' Course for the Pharmaceutical Chemist Qualifying Examination commences in October each year. **Composition Fee: 30½ Guineas per session**, plus incidental fees and deposits.

## DEGREE COURSES IN PHARMACY

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Courses in Pharmacology and in the Chemistry and Microscopy of Drugs are arranged for the Fellowship Examination of the Institute of Chemistry in Branch (E)—The Chemistry (including Microscopy) of Foods and Drugs and Water. A course in Biochemical Analysis preparing for the Diploma Examination of the Pharmaceutical Society in this subject is held on Wednesday afternoons.

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The Session commences on October 5th.

For Prospectus apply to the Registrar

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Day course commences 5th September, 1939. Assistant Dispensers' Course, in co-operation with the Leeds Public Dispensary, commences 11th September. Bacteriology Evening Course begins on 27th September.

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Education Offices,  
LEEDS

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Superintendent of the School and Professor of Pharmacy :  
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### B.Sc. IN PHARMACY

A course, extending over four academic years and leading to an honours degree in the Faculty of Science of the University of Glasgow, is open to students possessing the requisite entrance qualifications. A graduate in Pharmacy is entitled to be registered as a Pharmaceutical Chemist on passing an examination in Forensic Pharmacy. The examination for the Associateship of the Institute of Chemistry is open to graduates in Pharmacy on the completion of a further short course of study. The above course is suitable for students desirous of proceeding to the Fellowship of the Institute of Chemistry, Branch E (Foods and Drugs).

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A full-time course is offered for the above examination of the Pharmaceutical Society. Students are advised to take, where possible, the first-year course for the B.Sc. in Pharmacy which, when successfully completed, secures exemption from the Preliminary Scientific Examination.

### CHEMIST AND DRUGGIST QUALIFYING EXAMINATION

A course extending over one academic year is available for students who have passed or secured exemption from the Preliminary Scientific Examination.

### PHARMACEUTICAL CHEMIST QUALIFYING EXAMINATION

A course extending over one academic year is open to students who have completed the course for the Chemist and Druggist Qualifying Examination.

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SESSION BEGINS ON SEPTEMBER 19

Prospectus may be obtained on application to the Secretary.

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### Chemist and Druggist Qualifying Examination

### Pharmaceutical Chemist Qualifying Examination

### London B. Pharm. Degree

Lectures, Laboratory and tutorial instruction in subjects for the Examinations of the Pharmaceutical Society of Great Britain and the University of London. The Session extends over three terms from October to June.

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PRINCIPAL: L. W. KERSHAW, B.Sc., A.M.Inst.C.E., F.G.S.

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Head of School: A. R. G. CHAMINGS, B.Pharm., Ph.C., M.P.S.

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Chemist and Druggist	- - -	fee £21
Ph.C. and B. Pharm. (2 years)	- - -	fee per year £21
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Head of Chemistry Dept.—W. S. Patterson, D.Sc., Ph.D.,  
M.Sc., F.I.C.

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### FULL-TIME DAY COURSES

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Chemist & Druggist	- -	" " £20
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Intermediate B.Pharm.	- -	" " £20
Bachelor of Pharmacy	- -	" " £20

Deposit fee of £2 in each course.

Registration: WEDNESDAY, 20th SEPTEMBER, 3-6 p.m.  
Session begins MONDAY, 2nd OCTOBER, 1939

### PART-TIME EVENING COURSES

are held for students who require to take a Preliminary Course previous to either the Preliminary Scientific or Chemist & Druggist Course. A PART-TIME COURSE is held on WEDNESDAYS for Qualified Pharmacists wishing to take the DIPLOMA in BIOCHEMICAL ANALYSIS.

Registration day for Part-time Courses:

Wednesday, 13th September, 1939. 2-4 and 6.30-8.30 p.m.

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THE SECRETARY,

The Technical College, Sunderland.

## BIRMINGHAM CENTRAL TECHNICAL COLLEGE

Principal:

D. S. ANDERSON

Ph.D., B.Sc., A.R.T.C., M.I.Mech.E., M.I.A.E.

COURSES for the following EXAMINATIONS  
will commence on September 25th, 1939

PRELIMINARY SCIENTIFIC  
EXAMINATION.

C. & D. QUALIFYING EXAMINATION.  
PHARMACEUTICAL CHEMISTS'  
QUALIFYING EXAMINATION.

INTERMEDIATE B. PHARM. (LONDON)  
EXAMINATION.

FINAL B. PHARM. (LONDON)  
EXAMINATION.

Full particulars of these courses may be obtained on  
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P. D. INNES,

Chief Education Officer.

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The Institute is recognised by the Pharmaceutical Society for instruction in the subjects of Part I of the PRELIMINARY SCIENTIFIC EXAMINATION:—

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The SESSION starts SEPTEMBER 11th, 1939. Further particulars may be obtained from the Principal.

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## City of Cardiff Education Committee

THE

## Technical College

Principal : J. G. JONES, B.Sc., A.M.Inst.C.E., A.M.I.Mech.E.

The

## Welsh College of Pharmacy

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The College is recognised as a centre for the Examinations of the  
Pharmaceutical Society and the University of London.

Head of the Welsh College of Pharmacy:

R. VERNON LLOYD, B.Pharm. (Lond.), Ph.C., M.P.S.

### SESSION 1939-40

### *Commencing 2nd October, 1939*

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Examination.
- (d) A two years Course leading to the Pharma-  
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Bachelor of Pharmacy of the University of  
Wales and of the University of London.
- (e) A special one year (nine months) Course lead-  
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Examination. Only those students who have  
passed the Chemist and Druggist Qualifying  
Examination are eligible to enter this Course.
- (f) A course preparing for the Assistant Dis-  
penser's Examination of the Society of  
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Ordinary sessional tuition fee for any of the above  
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tember, 1939.

W. J. WILLIAMS,

City Hall, Cardiff.

Director of Education.

FOURTH EDITION  
REVISED AND REWRITTEN

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*The Courses are also suited to the requirements of those desiring to prepare for the Intermediate Science Examinations of the University of London in the above subjects.*

#### NEW SESSION commences

**Monday, September 25th, 1939**

#### ENROLMENT on

**Wednesday, Thursday and Friday,  
September 20th, 21st and 22nd, from 2 to 4 p.m.,  
and 5.30 to 8.30 p.m.**

Full particulars of these and other courses may be had on application to the PRINCIPAL.

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**COURSES leading to EXAMINATIONS of the PHARMACEUTICAL SOCIETY and for the DEGREE IN PHARMACY of the UNIVERSITY OF LONDON will open on 3rd October, 1939.**  
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#### NEW SESSION BEGINS 25th SEPTEMBER, 1939

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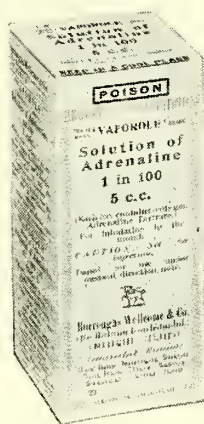
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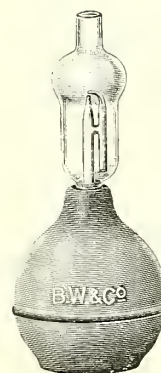
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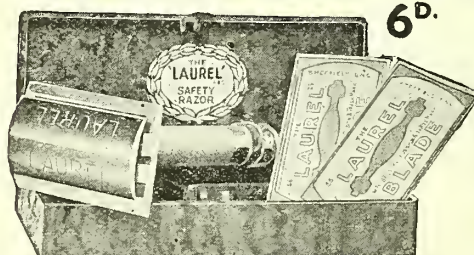
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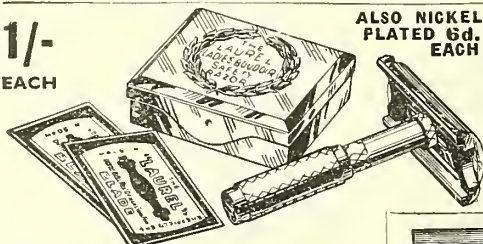
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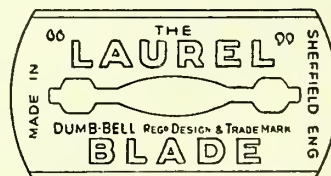
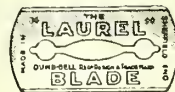
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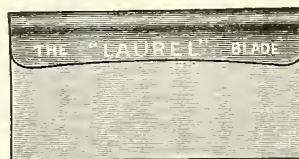
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## News of the Week

### Business Changes

THE LONDON INSURANCE COMMITTEE are returning from their temporary address at 91 Shepperton Road, Islington, London, N.I., to Insurance House, Insurance Street, W.C.1, on September 5. Telephone: Terminus 2266.

MR. FRED MITCHELL, M.P.S., Bradford, who, as announced in last week's *C. & D.* (p. 147), has acquired the business of the late Mr. Marmaduke Firth, informs us that he has transferred the stock to his pharmacy at 55 Darley Street.

### Proprietary Articles Trade Association

ADDITION TO LIST.—*Thomas Harley, Ltd.*, Rodine phosphorus beetle and cockroach poison, 7½d., 5s. doz.; 1s. 3d., 10s. doz., less 10 per cent. on orders value 30s. This article may be included with Rodine Phosphorus and Red Squill in a carriage paid order value 30s. An introductory bonus of one extra bottle to the dozen will be in operation at the same time as the bonus on Rodine—September 18-22 and October 1-15.

### Slow Burning Films

The Committee appointed to advise the Home Office and the Scottish Office on matters connected with the administration of the Cinematograph Act, 1909, has issued its report (H.M. Stationery Office, price 2d.). The Committee states that it is in agreement with the policy adopted by the majority of local authorities, of treating such films as outside the scope of the Act. It is suggested that films which comply with an approved definition of slow-burning film should be clearly marked accordingly. The view is expressed that where such films are exhibited in schools or elsewhere the safety arrangements may be left to those responsible for the arrangements. In Appendix B are suggested precautions which should be taken at exhibitions of slow-burning films to which the public are admitted, as follows:—(1) There should be some form of secondary lighting in operation, by electricity, gas, oil, electric torches, candles or the like. (2) Doors should either (a) open outwards or (b) be under the supervision of a responsible person during the entire programme. (3) Exits should be clearly marked above the doors. (4) Exits, doors and gangways should be kept clear of all obstructions and no standing in the gangways should be permitted. (5) A space clear of obstruction not less than two feet wide should be provided around the projection outfit, and no person other than the operators should be allowed within this space.

### Inquests

An inquest was held at Halesowen, on August 5, on the body of Horace Elijah Pearson, chemist's assistant. Mr. Horace F. Pearson, M.P.S., Long Lane, Cakemore, gave

evidence of the circumstances of the death. Dr. J. M. Webster, pathologist, who made a *post-mortem* examination, said that what he found was consistent with death from opium poisoning. The deputy coroner said it was easy to be wise after the event, but there was a possibility that with a little more treatment the life of the deceased might have been saved. Although the doctors might have been over-optimistic he did not think any blame could be attached to them. A verdict of "Accidental death" was returned.

At Stepney, London, E., on August 8, an inquest was held concerning the death of Ernest Langford, chemical works foreman, who died in Poplar Hospital after meeting with an accident at the Red Hand Composition Co.'s works, Silvertown, where he was employed. Evidence showed that on July 3 a stone jar containing arsenic trichloride broke and the liquid went over Langford's clothes. Workmen were supplied with waterproof suits and they were instructed to wear them when dealing with arsenic trichloride, but Langford was not wearing his suit at the time of the accident. Dr. John Henry Ryffel, Home Office analyst, said that he examined certain organs and found arsenic in the liver. There was also a small amount in the hair. The amount of arsenic in the liver was distinctly high in view of the fact that Langford had lived for five days after the accident, and he concluded from that that there was slow absorption of arsenic. That pointed to absorption from the skin. The jury returned a verdict of "Accidental death."

At Leicester, on August 3, an inquiry concerning the death of Sidney C. Hibbitt, aged thirteen, who died in the City General Hospital, was concluded. Evidence showed that while under treatment in the hospital the boy was given, together with seven others, a dose of a powder thought to be compound liquorice powder. The other boys recovered. The powder was afterwards found to be an insecticide. Nurse Irene M. Bradfield said that she found the tin when tidying up the kitchen of a ward some three months ago. She and two other members of the nursing staff tasted the powder in it and came to the conclusion that it was liquorice powder. She labelled the tin and put it in the medicine cabinet. The Coroner: Did you really expect to find liquorice powder in an old cocoa tin?—I did not doubt it for a moment. We have a selection of tins in the medicine cabinet. Sister Jessie Lewis said she instructed Nurse Bradfield to label the tin and put it in the medicine cupboard. Mabel Dunn, dispenser, said that when the tin was brought to her she did not realise that it contained the wrong powder. She emptied the powder down the sink because she thought it had gone stale. The coroner, in summing up, said that there was negligence, not amounting

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See p. 189

to criminal negligence, in the case. The jury returned a verdict of "Death by misadventure."

### Liverpool

According to the annual report of the Liverpool medical officer of health, the number of listed sellers of poisons in the city is 510.

Liverpool Chemists' Association and the Liverpool Branch of the Pharmaceutical Society have just issued in booklet form the annual reports—the eighty-ninth and sixteenth respectively. The booklet incorporates progress reports of the Guild of Public Pharmacists and the Liverpool Pharmacists' Golfing Society. The Association comprises 125 members, twenty-five associate-members, four honorary members and two corresponding members.

### Miscellaneous

**N.H.I. DRUG TARIFF.**—The Ministry of Health announce that it has now been decided that the National Health Insurance Drug Tariff shall be withdrawn from the list of publications on sale to the public. Commencing with the July-September issue, extra copies required may be obtained on application to the Ministry of Health, Whitehall, S.W.1, at a cost of 6d. per copy.

**IN THE COURTS.**—At Wolverhampton Quarter Sessions, on July 26, Clara Stokes was sentenced to twelve months' imprisonment for supplying certain pills knowing they were intended to procure miscarriage. The defendant admitted making the pills from a plaster.—At Old Street Police Court, London, on August 4, Benjamin Lipman and Harry Sovitch were charged with being concerned in breaking and entering a shop at 391 Mile End Road, Stepney, and stealing, among other goods, sixty cameras, a number of roll films, safety razors, razor blades, the property of A. & N. Catto, Ltd., chemists; and further with being concerned in receiving a number of cameras, knowing them to have been stolen. Accused were remanded.

## Irish Notes

### Miscellaneous

**MR. ROBERT BURNS MOFFATT**, son of the late Mr. David Moffatt, M.P.S.N.I., Inspector in the Northern Ireland Home Office, died on August 4 in the Templemore Avenue Hospital, Belfast.

**EVIDENCE OF A SALE OF STRYCHNINE.**—Two chemists gave evidence at Enniskillen on July 19, when Mrs. Lilian M. Dowler and James Willoughby were charged with the murder of the former's husband by poisoning him with strychnine. Mrs. Isobel Topping, Ph.C., Enniskillen, said that she had known deceased and his wife about five years. On February 11, Mrs. Dowler came to the shop alone, and witness saw her speak to her assistant, Mr. Mullan, at the counter. Witness produced her poison register showing that the accused obtained ten grains of strychnine. Mr. W. J. Mullan, Ph.C., said that after getting Mrs. Topping's permission he supplied Mrs. Dowler with ten grains of strychnine. Mrs. Dowler told him she wanted the strychnine for poisoning rats. The case was resumed on July 26 and July 31, when evidence was given by Henry K. Lawton, public analyst for Belfast, who stated that the total amount of strychnine discovered in various organs of the body was five-twelfths of a grain. In response to a question regarding the fatal dose of strychnine, Mr. Lawton expressed the opinion that it was a quarter to two grains. The accused were committed to the assizes.

## Scottish Notes

### Miscellaneous

**BUSINESS CHANGE.**—Mr. W. B. Paton, M.P.S., has taken over the business of Miss A. M. Barr, Kempock Street, Gourrock.

**MR. ALEXANDER ROBERTSON**, M.P.S., Dundee, gave an address on "Animal Products in Pharmacy, Old and New" to the local rotary club on August 3.

# Topical Reflections

By Xrayser

### Two Medical Views

Lord Horder must have been speaking with less than his usual acumen if he used the words attributed to him (p. 175) in a "Medical World" Supplement: "We must free the medical man from two dreadful alternatives—a breathless race to 'keep up' with modern advances by what goes by the name of 'refresher courses' and a despairing drift which is only relieved by the oft-times specious blandishments of the wholesale chemists." This sentence, more simply worded, appears to imply that the medical man's breathless race to keep up with modern advances is stimulated by refresher courses of dubious value, and that the alternative is a despairing drift, the sole relief for which is the blandishments, usually though not invariably specious, of wholesale chemists. Surely the medical profession cannot be in so parlous a state. In this suspicion of the motives of wholesale chemists there seems to be a remnant of the old tradition, found in seventeenth-century medical authors, that the best type of chemist is the physician. The specialisation of knowledge in the present century renders such a view untenable. Those of us who have seen some of the research carried on by or under the auspices of leading manufacturing houses are well aware that, in the words of Dr. Mutch, "such firms exert a powerful influence on post-graduate teaching." I suggest that the medical profession cannot afford to ignore the contribution to research that such firms are continuously making. The seventeenth-century tradition of the best type of chemist being the physician was, it is desirable to add, not held blindly by every author of the period. Thus Walter Harris, in his "Pharmacologia Anti-Empirica" (1683), showed a judicious discrimination between interested and disinterested students of chemistry. The heading of his second chapter, with its quaint phrasing and punctuation, may be appropriate here in lighter vein. "Adam no Chymist. Nor Tubalcain, the Poets Vulcan, Hermes Trismegistus, in all likelihood the first Famous Chymist.

No certainty of Moses being one. Solomon a Chymist in the best sense, and indeed the best Galenist. The loss of his Book of Simples never to be forgotten."

### Arte Vigilantia Probat

One of the best addresses it has been my good fortune to read is that of the president of the Pharmaceutical Society of Northern Ireland, reported on p. 153 of your last week's issue. Mr. Tate was presenting a certificate of qualification to each of the new licentiates of the Society, and he accompanied the presentation with advice that cannot be too thoroughly practised by those concerned. It is all too easy on such occasions to talk down to the presumed capacity of the audience; but to do so is fatal. The president succeeded in adopting, so far as it is possible for the president of a learned society to adopt, the point of view of a newly qualified pharmacist; and this address might well be adapted for broadcasting on a fitting occasion. Especially valuable is the hint that the education of the pharmacist "is in truth only commencing" when he has obtained a sufficient degree or diploma. Even the youngest of us, as Benjamin Jowett once said, is not infallible: realisation of the truth of that epigram lends support to the president's counsel to keep abreast of medical literature and of advances in chemical science. The other half of the sentence just referred to embodies the correlative truth that by "varied experiences day by day" one is laying up a store of beneficial knowledge. Several years ago a barrister holding an official position expressed to me, in conversation, his qualified approval of the injunction to burn legal text-books immediately after passing the requisite examinations for practice in either branch of the law. While it may not be wise to burn one's old text-books (and particularly those containing added notes), they should be used as sticks rather than as crutches. The words at the head of this paragraph were quoted by the president from the badge worn by him during his year of office.

# Stamp-duty Proposals from Tees-side

A MEETING of the Tees-side Branch of the Pharmaceutical Society was held in Middlesbrough recently, Mr. W. R. Brackenbury presiding, for the purpose of discussing (1) the British Pharmaceutical Conference resolutions (on which the meeting's opinions were made known to delegates); but mainly (2) the dangers and possibilities implicit in the Chancellor's announcement of postponement of stamp-duty repeal. The chairman gave a summary of recent activities of the Branch in focusing attention of local Members of Parliament on registration that would have deprived many pharmacists of their livelihood, being contrary to the now accepted principle that controlled distribution of medicines is a public need, and deprived the public of services of pharmacists, especially in poor districts.

## Support from M.P.s

THE SECRETARY (Mr. R. MacDonald Murray) reported that all eight Tees-side M.P.s had promised to support pharmacists' claims. One had wired him the result of the debate immediately it had become known, while others had written declaring their continued interest. Mr. Murray then initiated a discussion on medicine-stamp duties by suggesting the direction he thought any new legislation should take. He outlined the following principles on which in his opinion there would be general agreement amongst members:—(1) Production and sale of proprietary medicines should be submitted to much more severe restriction than at present; (2) outlets by which proprietary medicines reach the public should be limited, by raising considerably the cost of the patent-medicine licence; (3) a Board of Control, consisting of recognised authorities in the different branches of medicine, should be constituted, to which it should be made compulsory for the formula of every proprietary medicine to be submitted for registration before permission being given for its advertisement to the public; (4) the percentage of alcohol present in proprietary medicines over that required for preservation purposes should be clearly stated; (5) all active ingredients should be disclosed; (6) the annual licence payable should bear some relation to the rateable value of the registered premises. The present position, whereby for a consideration of 20 per cent. of the price of a stamped preparation, the Government was prepared to condone "quackery," could never, declared Mr. Murray, be regarded as satisfactory.

Mr. J. C. THOMPSON maintained that the present unsatisfactory position reflected adversely on the activities of pharmaceutical organisations that had advised firms they were within their legal rights in destamping.

Several members deprecated the action taken by a certain monopolistic concern towards the Government, and tribute was paid to the lead given by Messrs. Linstead and Mallinson in the recent campaign. THE SECRETARY mentioned that, in accordance with their expressed wish, he had extended thanks to all members who had in any way assisted.

Mr. GOODSWEN suggested that medicines for distribution should be placed in three groups:—(a) *Exempt from stamp duties*: All B.P. or B.P.C. drugs or compound preparations, so long as no proprietary rights were claimed and there was no brand mark or label, and all labels to state "B.P." or "B.P.C." as necessary. (b) *Also exempt*: Ethical preparations (formulas to be registered with Ministry of Health) advertised exclusively to the accepted profession and not to be advertised in the lay Press. (c) *To pay stamp duty*: All drugs, medicines and medicinal preparations of all kinds advertised in the lay Press for the relief of human ailments, whether for internal or external use. He suggested that sale of preparations in groups (a) and (b) should be restricted to pharmacists, and those of group (c) to pharmacists and to drug-store proprietors who had been in business for six months before the passing of new legislation; in businesses which were opened or acquired after this period the applicant was to prove he had served an indentured apprenticeship with a registered pharmacist. All other traders wishing to retail drugs were to make application before a bench of magistrates and prove that no existing facilities for obtaining drugs, etc., were available within a reasonable distance from premises in which they wished to retail them, notice that application was being made to be

advertised locally. If the licence were granted within these provisos a certificate was to be issued, and licence fees were to be paid to Inland Revenue authorities. Licences so granted by magistrates were to be renewed each year and cancelled if conditions in the area had altered (as when a pharmacist's service became available). Mr. Goodswen suggested an annual licence fee of £5 on premises rated at £50, £1 for each £10 increase in rateable value up to £2,000, all rateable values above this figure to pay £5 extra for each £100 increase in rateable value, all persons, firms and bodies corporate to pay licences on full rateable value of the premises they occupy and not on that part reserved for the sale of drugs.

Mr. GOULD proposed that a resolution along the lines suggested by Mr. Goodswen should be sent to the Society.

Mr. GOODSWEN said that before this was done he would like to co-operate further with the Branch secretary.

Mr. W. A. THOMPSON hoped that a minimum licence, such as had been suggested, would apply in the poorer districts, as in these areas chemists had to suffer much unfair competition from house-shops and other small shops which "dabbled" in the sale of medicines, to the detriment of the public and of the smaller chemists (who were responsible for maintaining an efficient pharmaceutical service). If a minimum annual licence fee of £5 was to be considered, the pharmacist should be enabled to deduct from this sum the fee already paid by him for registration. Whatever the outcome of the present position, they should insist that all formulas should be published in intelligible pharmaceutical nomenclature.

Mr. BRAY thought a pharmacist's own preparations should be sold unstamped provided they were made on his own registered premises. He further regarded a licence fee of £2 2s. for non-pharmacists and 10s. for pharmacists as sufficient, and said that a Board of Control should publish a standard book of formulas for the purpose of pharmacists preparing "known, admitted and approved" remedies.

Mr. KERSHAW suggested that licences for the sale of proprietary medicines should be issued on similar lines to those for wines and spirits.

THE SECRETARY reminded members that just over eighty years previously another Sir John Simon (then the Medical Officer for the City of London), in giving evidence before a Select Committee, had suggested that dispensing should be reserved to chemists. Perhaps, he went on, the present Chancellor might become responsible for some headway being made in this direction, though this could only come about by continued co-operation by pharmacists with the medical profession.

Mr. DENNIS OWEN proposed a vote of thanks to the members who had acted so well in pharmacists' interests recently.

## Recent Research

### Oil of Pandanus Odoratissimus

DESHAPANDE ("Journal of the Indian Chemical Society," 15, 509) finds that 15 kilos of the outer part of the flowers of this plant, known locally as Kewda, yield, by extraction with chloroform, 10 c.c. of essential oil, of which 70 per cent. consists of the phenolic methyl ether  $C_6H_5.CH_2.CH_2.O.CH_3$ , to which it owes its fragrance.

### Kenya Cypress Oil

ACCORDING to Sfras ("British Chemical Abstracts," 1939, 663), a sample of oil distilled in Kenya, probably from *Cupressinus lusitanica*, had a specific gravity 0.875, optical rotation  $+22^\circ 40'$ , refractive index 1.4788, acid value 0.5, saponification value 21.4, and saponification value after acetylation 50.9. The oil contains about 80 per cent. of terpenes, including  $\alpha$ -pinene, carene,  $\alpha$ -limonene, mycene, camphene, *p*-cymene,  $\alpha$ -terpinene, and phellandrene. It also contains about 12 per cent. of alcohols (borneol, citronellol, terpineol, and unidentified alcohols), and about 5 per cent. of ketones, mainly umbellulone.

## Pharmacy Act Case

At Great Yarmouth, on August 4, Bell's Pure Medicine Co., Ltd., 1 Pier Plain, Gorleston, were summoned for using the title of chemist without being registered pharmacists. There was a second summons relating to 15 Marine Parade, Gorleston. Mr. A. C. Castle, who appeared for the Pharmaceutical Society, said in the Pharmacy Act there was a provision that it should not be lawful for a person, unless he is registered as a pharmacist, to take or use in connexion with the sale of goods by retail the title of chemist. Where a company was concerned it was laid down that each set of premises must be run under the direction of a duly qualified chemist. This company had one shop at Pier Plain, Gorleston, and another at Marine Parade. Drugs were sold at the former, which was carried on as a chemist's shop. The latter was not carried on as such, but sold drugs. An inspector visited the Marine Parade shop and purchased some glycerin. On the label were the words dispensing and photographic chemists, but he found there was no chemist on the premises. He then visited Pier Plain and made a purchase, but found no chemist was there. In this case a chemist should have been employed in each shop. This was one of the things the Act was aimed at, so that a company should not be able to run several shops without a qualified chemist in each. Defendants were a registered company and had run "so-called chemists' shops with no chemist in charge." Cyril Morgan, an inspector under the Pharmacy Act, in reply to Mr. Pearson, for the defence, said an agent of his made some attempt to purchase poison but failed. He did not know that 15 Marine Parade were not premises belonging to the company. On the sun blind appeared T. F. Bingham, chemist. Over the door appeared the same, but every article he purchased in the shop bore the name Bell's upon it. The company was registered with the Pharmaceutical Society as Bell's Pure Medicine Co., Ltd., at the address of 1 Pier Plain, Gorleston. They were not registered at the other address. There the name put up was T. F. Bingham, M.P.S.

Mr. Pearson said the name of Bell was put up for the sake of the goodwill that attached to the former owner. Mr. Morgan said he did not agree that this was the reason. He had found that previously there had been a chemist named Bell at Gorleston. The objection was the association of Bell's with the word chemist. He derived his information from persons he called on at the premises.

In further answers Mr. Morgan said that a company could carry on shops for the sale of poisons under certain conditions. No poisons were sold at 15 Marine Parade or 1 Pier Plain, in the absence of Mr. Bingham. The retail sale of drugs must be under the direction of a superintendent or qualified chemist. In reply to Mr. Castle, Mr. Morgan said Mr. Bingham's certificate was only displayed at 1 Pier Plain. He had discussed with Mr. Bingham the case of a business in two parts, one being toilet articles and such like, and his argument was that by locking up his poisons and drugs he could separate them. Witness told him this was a fallacy. Thomas Frederick Bingham, registered pharmacist, of 20 Downing Road, Gorleston, said No. 1 Pier Plain was a drug store that belonged to him personally and not to the company, to whom the business belonged as a whole. Witness carried on the business at 15 Marine Parade. He informed the public of this by having his name on the blind outside and over the door. The company's name did not appear in or out of these premises. Witness had two labels for bottles, one for company use and one for himself. On one was Bell's Pure Medicine Co. No company labels were used at 15 Marine Parade. "Bell's, dispensing and photographic chemists," appeared on the labels at 1 Pier Plain. There used to be a Mr. Bell there previously. 15 Marine Parade was only a drug store. Witness was the registered pharmacist at 1 Pier Plain. Answering Mr. Castle, witness said in the past he had told Mr. Morgan that the drug store part of the business belonged to him. Witness kept separate sets of books for the company and for himself. For his own shop he ordered goods in his own name, what he could supply the company from his own stock he did, and other goods he ordered in the company's name. He left no qualified chemist in his shop during his absence.

Witness said he considered it necessary to have a chemist at a shop authorised for the sale of poisons, but not other-

wise. He went away for a week and did not leave a pharmacist in his place.

Mr. Pearson's defence was that the prosecution had made a mistake as to the ownership of the Marine Parade business. If the company carried on business there its name would have been exhibited outside. It was Mr. T. F. Bingham who carried on the business, and he had complied with all legal requirements. He was a registered pharmacist, and therefore could use the title "chemist." As to the other business, the company had also satisfied all conditions. Mr. Morgan had called when Mr. Bingham was not there, but he had stopped the sale of all poisons during his absence, so he was not bound to have a registered pharmacist there. Mr. Castle said that as soon as the company ceased to sell poisons it lost the right to call itself chemist. The Bench found the two cases proved and imposed a fine of £10 in each.

## Parliamentary News

### OPTICAL APPLIANCES

A debate on the supply of optical appliances to the Forces took place on August 3, when Mr. Rhys Davies asked the Secretary of State for War the date on which he contracted with the National Ophthalmic Treatment Board for the supply of optical appliances, and whether he was aware that the nature of the contract has established a monopoly for a few dispensing firms of opticians to the exclusion of several thousand opticians throughout the country, recognised for optical service by the Ministry of Health under the National Health Insurance Acts; whether he has considered the representations on the terms of this contract from the Joint Council of Qualified Opticians and the British Optical Association; and whether he would agree to receive a representative deputation to discuss the matter?

Sir H. Williams inquired as to the conditions and terms under which members of the Territorial Forces are supplied with duplicate lenses for spectacles for use with service respirators.

Sir R. Miller spoke of the dissatisfaction created in the wholesale and retail optical profession by the arrangements made by the War Department for the supply of optical appliances to the forces through a monopoly of a few selected firms of dispensing opticians.

Mr. Rhys Davies asked whether members of the Territorial Forces who normally wear spectacles are not permitted to obtain duplicate pairs for use with service respirators from their own opticians but are compelled to go to a selected group of firms of dispensing opticians; and whether the Secretary of State for War was prepared to reconsider the present arrangements consequent upon the representations that have been made to him from the optical profession?

Sir V. Warrrender, in replying, said for the sake of administrative simplicity it was decided to make use of the existing agreement with the National Ophthalmic Treatment Board for the provision of spectacles, rather than to enter into other arrangements. Many representations have been received on this subject, but it is clear that the National Ophthalmic Treatment Board offers, economically and efficiently, the services which are needed, and that other bodies have not the full services to offer. No useful purpose would, therefore, be served by receiving a deputation.

### MEDICINE STAMP DUTIES

Captain Elliston asked the Chancellor of the Exchequer on August 4 whether he can now give the House any further indication of his intention with reference to the Medicine Stamp Duties?

Sir John Simon in the course of his reply said he had been in consultation with the Minister of Health, and it was proposed jointly to appoint a Committee to examine the whole question. Sir John said he was not yet in a position to announce the precise terms of reference, but the intention is that the Committee's inquiry shall cover both the control and the taxation aspects of the question.

## Company News

P.C. means Private Company and R.O. Registered Office

SUN-WED REMEDIES, LTD. (P.C.).—Capital £5,000. Objects:  
To carry on the business of chemists, druggists, etc. William  
Richardson, The Limes, Marden, Kent, director. R.O.:  
2 Ashford Road, Maidstone, Kent.

R. O. S. Co., LTD. (P.C.).—Capital £1,000. Objects: To carry on the business of manufacturers of and dealers in chemicals, medicines, medical and surgical appliances, etc. Solicitor: J. Rothwell Dyson, 31 Queen Victoria Street, E.C.4.

M. ANDREWS, LTD. (P.C.).—Capital £500. Objects: To carry on the business of chemists, herbalists, drug merchants, dealers in toilet requisites, opticians, etc. The first directors are to be appointed. R.O.: 94 Station Road, Hampton, Middlesex.

TECHNICAL CHEMICALS, LTD. (P.C.).—Capital £800. Objects: To carry on the business of chemists, druggists, oil and colour men, etc. Chas. E. Cole (chairman), 47 Hill Rise, Greenford, Middlesex, director. R.O.: Bond Street House, New Bond Street, W.1.

**MEDICAL PATENTS, LTD. (P.C.).**—Capital £100. Objects: To carry on the business of manufacturers of and dealers in electrical apparatus, including sun ray, ultra violet ray and all other types of equipment, etc. R.O.: 40/43 Norfolk Street. Strand, W.C.2.

DE MILOS, LTD. (P.C.).—Capital £1,000. Objects: To carry on the business of manufacturers of and dealers in chemical goods, etc. Hyman Gold and Mrs. Fenella Gold, both of 28 Templar's Avenue, N.W.11, directors. R.O.: 47 Golders Green Road, N.W.11.

FULGO METALS, LTD. (P.C.).—Capital £3,000. Objects: To carry on the business of merchants in and brokers of copper, tin, zinc, lead, antimony and all or any other metallurgical and chemical products, etc. The first directors are to be appointed. R.O.: 3-9 Southampton Row, W.C.1.

S. C. STANNARD, LTD. (P.C.).—Capital £500. Objects: To carry on the business of chemists' and druggists' sundriesmen, vendors of patent medicines, prepared foods and proprietary articles, etc. Stanley C. Stannard, 20 South View Road, Southampton, director. R.O.: 104 Park Road, Freemantle, Southampton.

HILLSIDE PHARMACY, LTD. (P.C.).—Capital £500. Objects: To carry on the business of wholesale and retail chemists and druggists, manufacturers of and dealers in chemicals, drugs, medicines, etc. Miss Betty Seidman, 222 Great Clowes Street, Higher Broughton, Salford, director. R.O.: 371 Victoria Avenue, Blackley, Manchester.

**ZERMOPAD (SALES DISTRIBUTORS), LTD. (P.C.).**—Capital £1,000. Objects: To carry on the business of manufacturers or of dealers in chemical, medical and surgical preparations, compounds (including Thermo-Compounds), appliances and devices (including the device known as Zermopad) of all kinds, etc. The first directors are not named. Solicitors: Evershed & Son, 40 Chancery Lane, W.C.2.

HATTONS (CHEMISTS), LTD.—At a meeting held in London recently it was resolved that this company be wound up voluntarily. Mr. K. Patterson, 22 Conduit Street, London, W.1, was appointed liquidator.

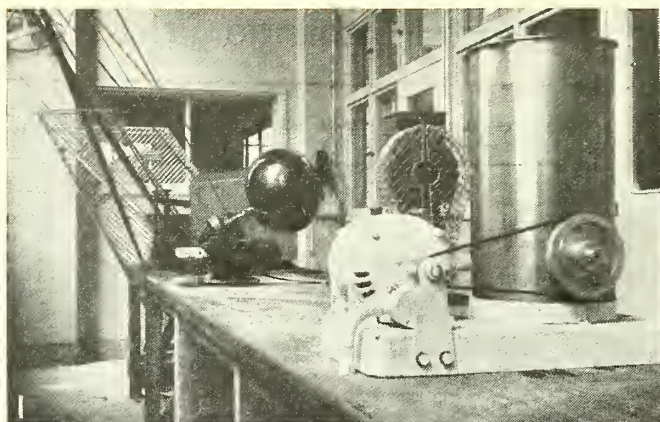
SUSSEX COSMETICS, LTD.—Notice has been given in the "London Gazette" that a meeting of the creditors of the above-named company will be held at the offices of A. C. Palmer & Co., 57 Gracechurch Street, London, E.C.3, on August 15.

COMPANIES DISSOLVED.—Notice has been given in "The London Gazette" that the names of the following companies have been struck off the register and the companies dissolved:—Auto Chemists, Ltd.; Chemical Processes & Products, Ltd.; Harcourt's Drug Stores, Ltd.; R. J. Troughton (Chemists), Ltd.; Staniforth Pharmacy, Ltd.; Sulphurophosphate, Ltd.

**BANKRUPTCY.**—T. H. Hamnett, 63 Market Place, Lyttelton Road, Hampstead Garden Suburb, and 24 Birchington Road, West Hampstead, chemist.

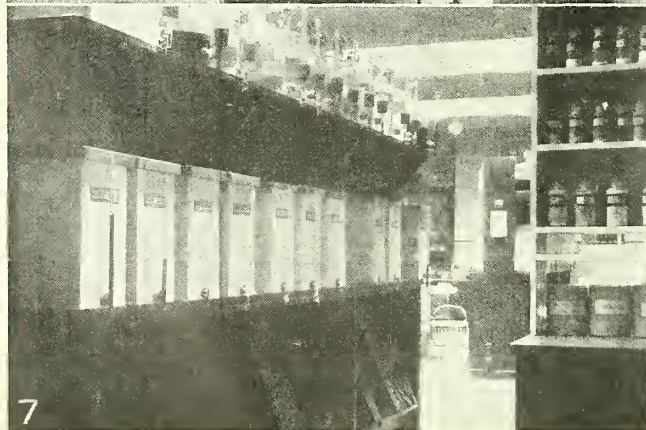
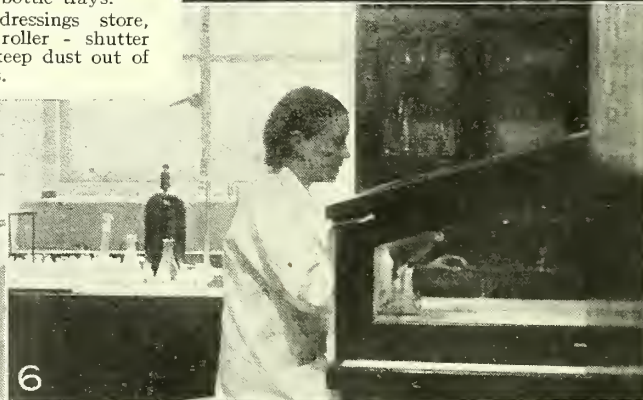
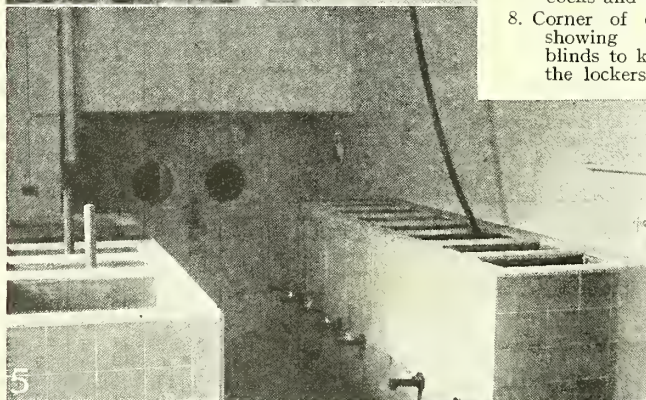
## Stock Exchange Prices

$\text{£}1$ shares unless otherwise stated	Dec. 30, 1938	June 30, 1939	July 31, 1939
	s. d.	s. d.	s. d.
Allen & Hanburys, 7% Prefd. Ord. ...	26 3	25 6	25 0
Amalg. Dental Co., 8% Prefd. Ord. ...	25 6	24 0	24 0
" " Deferred £1 ...	11 3	12 0	12 9
Aspro, Ltd., 5s. shares ...	11 6	13 6	13 0
Ayrton, Saunders & Co., 7½% Pref. ...	22 9	21 9	21 9
Beechams Pills, Deferred 2s. 6d. shares ...	7 6	8 9	8 6
Benger's Food, Ord. ...	19 6	19 6	19 6
Benzol & By-Products cum. part. Pref. ...	18 0	20 6	20 7½
Berger (Lewis) & Sons, Ord. ...	48 0	44 3	44 9
Blundell Spence & Co. ...	12 3	7 6	6 10½
Boake (A.), Roberts & Co., 5% Pref. ...	20 6	20 7½	20 3
Boots Pure Drug, Ord. 5s. shares ...	39 3	40 3	43 0
Boots Pure Drug, 7% "A" Prefd. Ord. ...	32 6	30 9	30 9
Boots Cash Chemists (S.), 6% "A" Prefd. ...	28 6	27 6	27 6
Borax Consold., Dfd. Ord. ...	27 0	19 9	21 3
Bovril, Ord. ...	27 1½	24 0	23 9
" Dfd. ...	20 4½	17 3	17 6
British Industrial Plastics (formerly British Cyanides), Ord. 2s. shares	2 0	1 7½	1 7½
British Drug Houses, The, Ord. ...	21 9	21 3	21 6
British Glues & Chemicals, 4s. Ord. ...	4 4½	4 9	5 0
British Oil and Cake Mills, Prefd. Ord. ...	41 0	41 0	39 9
British Oxygen, Ord. ...	71 0	75 0	80 6
British Photo. Indus., 6% Cum. Pref. ...	3 3	2 10½	2 9
Burt, Boulton & Haywood, Ord. ...	18 6	17 9	17 3
Bush (W. J.) & Co., 5% Pref. £5 ...	100 0	97 0	97 0
Callard, Stewart & Watt, Ord. ...	3 7½	3 0	1 9
Cooper, McDougall & Robertson, Ord. ...	27 0	22 6	21 6
Crosfield (Joseph) & Sons, 6½% Pref. ...	27 0	25 6	25 6
Dubarry Perfumery Ord. rs. ...	2 4½	2 1½	2 3
" " 7½% Pref. ...	21 6	21 0	22 6
Evans Sons Lescher & Webb, Ord. 6s. 8d. shares	3 9	2 6	2 6
" " " 6% cum. part. Pref.	6 3	5 0	5 0
Field (J. C. & J.), Ord. ...	23 9	23 9	23 9
Galloway (P. H.), Ord. 2s. ...	2 10½	2 3	2 3
" " 7½% Cum. Pref. ...	26 0	23 1½	23 7½
Genatosan, Ltd., rs. ...	5 0	5 3	5 3
Gossage (William), 6¼% Pref. ...	26 9	27 9	27 9
Greeff-Chemical Findings, Cum. Pref. 10s. Ord. 5s. ...	9 9	8 9	8 9
Griffiths Hughes (Kruschen), Ord. ...	5 3	6 0	6 0
Groult & Co., Ord. ...	8 3	7 6	7 1½
Hodders, Ord. rs. ...	9 3	11 9	12 6
Hodders, Ord. rs. ...	0 7½	0 7½	0 7½
Ilford, Ltd., Ord. ...	26 9	24 9	24 10½
" " 6% Pref. ...	25 0	24 1½	23 6
Imperial Chemical, 7% Pref. Ord. ...	31 0	29 4½	29 9
" " " Ord. ...	30 9	29 1½	30 0
Intern. Sponge Importers, 6% Pref. Knight (John), 25% Prefd. Ord. ...	3 6	5 0	5 0
Laporte (B.) & Co., Ltd., Ord. ...	90 0	77 6	78 1½
Lever Bros., Ltd., 7% Pref. ...	83 9	58 0	60 6
" " 8% Pref. ...	28 6	26 3	27 6
" " 20% Prefd. Ord. 5s. ...	30 6	26 9	28 6
Lewis & Burrows, Ord. ...	18 3	16 6	17 0
" " 6% Pref. ...	21 3	21 3	21 3
Liebig's Ext. of Meat, Ord. £5 ...	20 0	18 9	19 3
Macleans 6% Red. Pref. ...	£14½	£14	£14½
Mellin's Food, 6% Pref. ...	21 6	21 3	20 6
Nathan, J. (Glaxo), 7% Pref. ...	1 3	1 0	0 9
" " 8% Prefd. 10s. ...	21 6	22 6	22 3
" " " Ord. rs. ...	11 4½	11 3	11 0
Pears (A. & F.), 5% Deb. £100 ...	6 0	4 9	4 9
Reckitt & Sons, Ord. ...	£107	£107	£107
Sangers, Ord. 5s. ...	102 6	100 9	101 3
" Sanitas," The, Co., 9% Pref. ...	21 6	20 9	21 0
Sanitas Trust, 10% partic. Pref. ...	25 6	24 6	24 3
Smith (Stephen) & Co., Ord. 5s. ...	26 9	24 0	24 6
Spratt's Patent, Ord. ...	8 7½	7 0	7 7½
Stevenson & Howell, 6¼% Cum. Pref. ...	46 6	49 0	47 6
United Glass Bottle Man., Ord. ...	23 9	22 0	22 0
Veno Drug Co., 8% Pref. ...	48 9	45 6	49 6
Virol, Ltd., Ord. ...	24 0	25 0	24 3
" " 7% Pref. ...	29 3	27 6	27 6
White (A. J.), Ltd., Ord. 10s. ...	24 6	24 3	24 4½
White (Timothy) & Taylors, 7½% Pref. Ord. 5s. ...	16 9	14 9	15 6
Woodlands, "Chemists," Ord. 2s. ...	28 7½	27 0	27 0
Wright, Layman & Umney (1932), 7% cum. Pref. ...	22 6	22 3	22 10½
" " " " " " " " " " " "	0 9	0 8	0 6
" " " " " " " " " " " "	22 9	23 3	22 9



## WESTMINSTER HOSPITAL DISPENSARY

1. The machine bay.
2. Part of out-patient dispensing bench. Note ointment drawer-slab in foreground and quick-action taps at sink.
3. View of dry store.
4. A view of the Analytical Laboratory.
5. Glass-lined mixture vats.
6. Sterilising laboratory. Ampoule filling under aseptic conditions.
7. View inside dispensary. Note Keebush vats, gauged-cocks and bottle trays.
8. Corner of dressings store, showing roller-shutter blinds to keep dust out of the lockers.



# Westminster Hospital

## and Its Pharmaceutical Department

THE new Westminster Hospital is situated in Horse-terry Road, Westminster, at the Lambeth Bridge end. The buildings, comprising the hospital itself, medical school and nurses' home, occupy two sides of the pleasant St. John's Gardens. Within a couple of years it is proposed to erect a further block to house, chiefly, the secretarial and administrative departments, on the south-west side of the Gardens but separated therefrom by Page Street.

The building is an essentially modern structure of brick and stone, designed to afford the utmost amount of daylight to every part. The walls and windows have been specially strengthened to withstand "blast"—a commentary upon the state of the times—and a private roadway, which runs under the entire length of the building and has an airlock at either end to serve against gas attack. Air-conditioning plant is installed for the lower stories and also for the operating theatres on the sixth floor. The total cost of the hospital building, alone, has been £850,000, and on the occasion of the formal opening by the King and Queen last April, the chairman (Sir Bernard Docker) was able to announce that the hospital would start clear of debt.

### The Pharmaceutical Department

The basic conception of the pharmaceutical department is a compact dispensary maintained by stores and laboratories situated adjacently and below; the dispensary being designed and equipped with every convenience to facilitate dispatch in dealing with out-patients and the demands of the in-patients and of other hospital departments. It is oblong in shape and has four units for out-patient service, each a fairly complete miniature dispensary in itself. Lamson pneumatic tubes for receiving requisitions, and for the dispatch of small articles, connect the dispensary with all floors; and a small lift operates exclusively between the dispensary and the spacious stores and laboratories in the basement. Aside from general layout and organisation, numerous special features have been incorporated to expedite service and promote accuracy and efficiency in operation.

In place of the usual type of cylindrical glass, or glazed ware, jars for stock mixtures, etc., rectangular vats with plunger-stirrers have been provided. These are composed of keebush, a durable synthetic resin, and they are fitted with teak lids and the Simpson gauge-cock. Modifications of this latter device are in use for a variety of purposes and have, already, proved eminently satisfactory. For extemporaneous ointments, frequently ordered on "skin" clinics, a vitrolite slab, built into a drawer with a receptacle for spatulas, is available at each window, while stock ointments, in bulk, are kept in swing-boat containers, constructed of keebush material. As far as possible, however, the standard ointments used for out-patients are kept ready-packed in drawers conveniently to hand. All woodwork is in polished teak with bench tops of heavy brown linoleum. The drug rounds have recessed glass labels, and measures are of glass or stainless steel. The main stocks are stored in cupboards and drawers in and over the benches and in the individually designed island fittings.

### Sterilisation Apparatus

Opening from the dispensary are several smaller rooms. These include an up-to-date analytical department, staff room, administrative office and sterilising laboratory. The last-named, designed for operations under aseptic conditions, is tiled from floor to ceiling and has a positive-pressure atmosphere. Its equipment includes two large autoclaves, steam-heated and fitted with automatically operating, reducing valves which can be set to maintain a constant pressure without blowing off steam into the air; other apparatus is a Sterotherm and electrically-heated Manesty still, while for ampoule-filling a collapsible screen is fitted.

The manufacturing laboratories are spacious, well-lit and fully equipped for the preparation of pharmaceutical products on a large scale. They have commodious bench accommo-

dation and low and also bench-level sinks, furnished with hot, cold and soft water, and vacuum taps. Three ranks of glass-lined tanks, of 30- and 60-gallon capacity, are intended for the storage of stock lotions and mixtures. Large-bulk dry-goods are kept in bins. One interesting feature is provided by the two fully equipped travelling "benches" which permit the manufacture of large volumes of mixtures, etc., with the minimum of effort. All manufacturing machinery is power-driven and is housed, with sound-proofing precautions, separately from the main laboratory. Among other machinery are tablet-machines, a coating pan, oscillating granulator, powder mixer and sifter, homogeniser, two ointment mills and a disintegrator. In the "steam" room there are two modern glass-lined boiling pans with tilting device, an evaporator (also glass-lined), a still and water-softening plant.

### Bottle-Washing

In hospital practice, bottle-washing and storage form an ever-present demand upon time and labour. The problem has been vigorously tackled at Westminster by providing a separate department for washing and storing. It is furnished with three large sinks with ample hot water and a spray-rinsing device. An illuminated panel facilitates inspection of each bottle to ensure cleanliness. After washing, the bottles are stacked in drainage trays of varying depth but of uniform width and length calculated as the L.C.M. of all the sizes handled.

Poisonous substances in large bulk have to be stored both in connexion with the normal work of the institution and as a precaution against a major emergency. A whole room with grille-fronted door is set aside as a poisons store, and a section of this room is grilled off for the exclusive storage of D.D.A. drugs.

The issuing of very large assorted stocks of surgical dressings to London hospitals by the London County Council in conjunction with the Home Office as a war emergency measure has laid a severe strain upon the storage capacity of most hospitals. Fortunately, the surgical dressings store designed for the new Westminster Hospital was of a commodious nature, and it has been possible to accumulate many tons of dressings without placing any undue tax on the space available. A wide bench running centrally the whole length of the room is useful for sorting dressings, and the cupboards beneath are used for miscellaneous glassware.

### Oxygen and Nitrous Oxide

Both oxygen and nitrous oxide are conveyed by pipe-line from a control room to every department where they are likely to be used. Each gas is delivered from a manifold rack holding two rows of cylinders; one row in use, the other spare. When one row is empty an automatic switch-over to the full row occurs, and simultaneously a warning light switches on in the dispensary. The surge of gas which would occur should any one of the main distributing lines be broken causes a cut-off valve to check the flow from the line concerned but without affecting the others. This is an entirely new safety feature. Small cylinders containing carbon dioxide, cyclopropane, etc., are stored in a metal rack in another room.

Space forbids any individual mention of the numerous other features which have been incorporated to assist the smooth and efficient running of the department. Perhaps, however, sufficient has been described to justify a statement that the whole is a real contribution to the progress of hospital pharmacy.

THE FORTY-SIXTH annual report of the Christie Hospital and Holt Radium Institute, Withington, just issued, contains considerable information on the progress in radiology, and in particular in the treatment of cancer, made at the Institute during the past year. In January last a new private patients' home, known as Nathan House, was opened. A table giving five-year results of treatment of malignant disease shows that 81 per cent. of "early" cases (one-third of the total number of cases) and 41 per cent. of all the cases were alive. The amount of radium at the disposal of the Institute is 8½ gm.

# Pharmaceutical Society of Great Britain

## Edinburgh Examination Results

The following are the results of the examinations held in Edinburgh during July:—

Examination	Entered	Absent	Failed	Referred (one subject)	Passed
Preliminary Scientific:—					
(a) Whole examination ...	251	3	114	45	89
(b) Referred subject ...	47	1	—	15	31
Chemist and Druggist Qualifying:—					
(a) Whole examination ...	348	3	70	81	194
(b) Referred subject ...	17	0	—	1	16

The board also prescribed that, before re-entry for the examination, four candidates should undergo a further course of instruction as follows: Preliminary Scientific Examination.—In botany, chemistry and physics, 1; botany and physics, 1; botany, 1; physics, 1.

### SUMMARY OF REJECTED CANDIDATES

Subject	Entered	Absent	Referred	Failed
Biology (botany + zoology) ...	172	0	15	59
Botany (botany section only) ...	103	2	13	49
Chemistry ...	265	4	16	100
Physics ...	260	3	16	96
Pharmacognosy ...	349	3	17	50
Pharmaceutics ...	357	3	46	55
Physiology ...	350	3	4	49
Pharmaceutical chemistry ...	353	3	15	49
Forensic pharmacy ...	348	3	0	23

### CHEMIST AND DRUGGIST QUALIFYING EXAMINATION

The following candidates have satisfied the examiners:—

Alexander, T., Edinburgh  
 Anderson, E. A., Edinburgh  
 Anderson, J. W. M., Aberdeen  
 Ash, S., Pudsey  
 Auerbach, Lucy M., Birmingham  
 Bailey, N., Bradford  
 Bald, D. W. N., Portobello  
 Banks, R. N., Bolton  
 Bannerman, J. E., Arbroath  
 Beattie, D. M., Montrose  
 Beattie, T., Durham  
 Bell, F. A., Leeds  
 Bell, N., Ushaw Moor  
 Benson, G., Wigan  
 Bernstein, S. M., Liverpool  
 Binnie, A., Dundee  
 Blake, R. J., Wishaw  
 Booth, Brenda N., Edinburgh  
 Booth, G. D., Leeds  
 Bourne, F., Oldham  
 Bramall, Marjorie N., Leeds  
 Brown, Margaret J., Birmingham  
 Brook, J. L., Bradford  
 Broughton, W. H., W. Hartlepool  
 Burgon, H., Edinburgh  
 Cade, F. V., Sutton Coldfield  
 Cameron, J. W. F., Helensburgh  
 Caws, E., Bradford  
 Chanter, W. H., Bradford  
 Charmak, M., Leeds  
 Chillington, E. H., Smethwick  
 Clark, T., Buckhaven  
 Conroy, Margaret, Bradford  
 Cooke, J., Warrington  
 Corbett, L. W., Liverpool

Cowie, J., Buckie  
 Crichton, A., Glasgow  
 Cruickshank, D. J., Turriff  
 Cruickshank, R. F., Leith  
 Cumming, C. F., Hawick  
 David, G. S., Edinburgh  
 Davidson, A., Methlick  
 Deakin, W. C., Walsall  
 Dougherty, R. D., Edinburgh  
 Draper, A., Bolton  
 Evans, R., Rochdale  
 Ewen, S. D., Monifieth  
 Fairclough, J. V., Blackpool  
 Fairlie, Mary B., Consett  
 Farquhar, D. W. D. F., Edinburgh  
 Fearnhead, E., Salford  
 Fieldhouse, H., Edinburgh  
 Findlay, J. A., Aberdeen  
 Firth, J. S., Rothwell  
 Ford, P., Clydebank  
 Forster, J., Ryton-on-Tyne  
 Fraser, F., Cults  
 Gilchrist, J. W., Edinburgh  
 Gottliffe, H., Leeds  
 Gould, B., Liverpool  
 Graham, A., West Hartlepool  
 Gray, C. W. G., Edinburgh  
 Gray, J. A., Bradford  
 Gregory, S., Oldham  
 Grieverson, Lilian, Philadelphia  
 Haigh, D., Kirkburton  
 Hardcastle, E., Bingley  
 Hardie, Gertrude M., Inverurie  
 Hargreaves, R., Bradford  
 Harrison, C. K., Liverpool  
 Hartley, E. L., Harrogate

Hartley, F., Burnley  
 Hawkins, R. H., Birmingham  
 Hay, G. R. H., Edinburgh  
 Henshall, T., Crewe  
 Hey, D., York  
 Hilton, W. G., Edinburgh  
 Hodgson, S., Rotherham  
 Holbem, J., Southport  
 Hollas, Joan, Blackpool  
 Houlker, K., Clitheroe  
 Howe, A. L., Gateshead  
 Hughes, Emma V., Edinburgh  
 Hulme, E., Chorley  
 Hunter, J., Bradford  
 Hunter, J., Bonnybridge  
 Innes, F. R., Aberdeen  
 Jeavons, J. G., Stockton  
 Johnston, J. S., Edinburgh  
 Johnstone, H., Glasgow  
 Johnstone, T., Motherwell  
 Jones, C., Liverpool  
 Jones, D. L., Liverpool  
 Kaye, S., Huddersfield  
 Keedy, G., Jarrow-on-Tyne  
 Kettlewell, W. L., Bradford  
 Lawrence, J. H. V., York  
 Leddie, S., Dundee  
 Lees, A., Edinburgh  
 Leggat, J. McD., Glasgow  
 Lewis, A. W., Bolton  
 Little, D., Clarkston  
 Lloyd, T. H., Stockton  
 Logie, Elizabeth H., Dundee  
 Long, E. G., York  
 McGregor, W. A., Aberdeen  
 McGuinness, J. T., S. Shields  
 MacKay, R., Edinburgh  
 McKenna, W. J., Liverpool  
 Mackie, T., Cardenden  
 MacLachlan, Margaret A. C. S., Wallasey  
 McLaren, J., Burntisland  
 McLaren, J., Glasgow  
 McWiggan, T. J., Nottingham  
 Makin, A. T., Chorley  
 Malimson, Annie S., Higher Broughton  
 Malloch, M. McG., Glasgow  
 Marshall, A., Alloa  
 Marshall, J., Gorebridge  
 Mather, T., Bolton  
 Matheson, D. W., Wigan  
 Mathieson, D. B., Aberdeen  
 Mattar, K., Edinburgh  
 Maxim, H. G., Rochdale  
 Mercer, A., Dunfermline  
 Middleton, H., Edinburgh  
 Milburn, T. R. S., Newcastle-on-Tyne  
 Mitchell, A., Elgin  
 Mitchell, Edith M., Leeds  
 Mitchell, Jean, Paisley  
 Monks, T. E., Warrington  
 Morris, J., Chadderton  
 Neil, J. C., Catrine  
 Nisbet, Catherine W., Edinburgh  
 Nolan, D., Liverpool  
 Norrie, J. D., Southport  
 Nussey, T. S., Edinburgh  
 Odell, Grace G. H., Kirkcaldy  
 Owen, J., Chester  
 Park, Veronica M., Blundellsands  
 Parker, Doreen, York  
 Patrick, R. C., Nottingham

Pattinson, E., Edinburgh  
 Pepper, E. B., Liverpool  
 Peters, R. D., W. Bromwich  
 Pike, E. R., Birmingham  
 Pitts, B., Shipley  
 Pringle, N., Edinburgh  
 Proctor, J. C., Paisley  
 Quark, J. B., Edinburgh  
 Ramsey, J., Windygates  
 Read, C., Dudley  
 Rhodes, J. W., Bradford  
 Robertson, E. McL., Dundee  
 Robertson, Eva B., Edinburgh  
 Robinson, B., Birmingham  
 Robinson, E. H., Baildon  
 Scott, A. MacK., Peterhead  
 Scott, A., Dundee  
 Scott, C. W., Aberdeen  
 Scott, J. O., Edinburgh  
 Scott, R., Aberdeen  
 Shannon, N., Saltcoats  
 Sharples, J., Darwen  
 Shearer, R., Keighley  
 Sheldon, F. B., Jarrow  
 Shemilt, J. D., Birmingham  
 Shryane, B. T., Birmingham  
 Sibbald, J. W., Dundee  
 Sillett, G. A., Sunderland  
 Simpson, S., Dundee  
 Singleton, E., Colne  
 Skinner, J. J., Stirling  
 Slater, W., Dundee  
 Smith, T. A., Blackpool  
 Sneddon, J. S., Chirnside  
 Staples, G. E., Birmingham  
 Stark, A., Renfrew  
 Steel, Martha M., Glasgow  
 Steel, Rachel G., Glasgow  
 Stein, J. F., W. Hartlepool  
 Stephen, N. A., Edinburgh  
 Stewart, W. F., Edinburgh  
 Strong, C. J., Bradford  
 Swadling, W. M., Birkenhead  
 Swift, S. R., Bradford  
 Swindle, G. E. D., Liverpool  
 Taylor, J., Edinburgh  
 Tonks, H. B., Nelson  
 Trail, J. R., Aberdeen  
 Turner, Eileen R., Walsall  
 Urwin, J. B., Rosyth  
 Wadsworth, W., Huddersfield  
 Wainwright, W., Wakefield  
 Walker, S., Cleckheaton  
 Wandless, Jessie A., Edinburgh  
 Watson, R., Manchester  
 Watson, W., Edinburgh  
 Watt, C. R., Aberdeen  
 Whitehead, J., Burnley  
 Williams, P. C., Wallasey  
 Williams, R. M. P., Liverpool  
 Wilson, A., Selkirk  
 Wilson, D. L., Glasgow  
 Wood, A. J., Aberdeen  
 Woodhead, H. B., Manchester  
 Wright, C. L., Aberdeen  
 Wright, Doris, Edinburgh  
 Wrigley, T., Bolton  
 Yeaman, W. L., Coupar Angus

# Fairchild Scholarship

The following is the text of the papers set at this year's examination, the results of which are given on p. 203:—

## CHEMISTRY AND PHYSICS

(Time allowed—two hours)

- (1) Define the ampere, the volt, the joule. Describe the construction and principle of some form of ammeter.
- (2) Explain: (a) evaporation, (b) boiling, (c) specific heat, (d) saturated vapour pressure. How may the "dew point" of the air be determined and from it the relative humidity calculated?
- (3) Explain what is meant by (a) chemical equilibrium, (b) catalysis. Illustrate your answer by examples.
- (4) Give a method by which sulphur trioxide may be prepared. Describe the action of sulphuric acid on (a) carbon, (b) copper, (c) potassium iodide.
- (5) What is the composition of the substances used in pharmacy under the following names:—(a) ammonium carbonate, (b) light magnesium carbonate, (c) bismuth carbonate, (d) calcium carbonate. Describe the usual method of preparation of two of the above.

## PRACTICAL PHARMACY AND PRESCRIPTION READING

(Time allowed—one hour and a half)

- (1) What is an emulsion? Describe the methods you would adopt to prepare a satisfactory emulsion of the following:—(a) cod liver oil 50 per cent. in water, (b) acriflavine 0.1 per cent. in liquid paraffin.
- (2) Give reasons for the presence of the following constituents in the preparation of these official preparations:—(a) linseed oil and potassium hydroxide in liquor cresolis saponatus, (b) liquid glucose in saccharated carbonate of iron, (c) chlorbutol and sodium chloride in solution of adrenalin hydrochloride.
- (3) Discuss the advantages and disadvantages of fresh infusions and concentrated infusions. Illustrate your answer with a brief account of the preparation of the infusions of (a) clove, (b) senega.
- (4) Which is the greater:—(a) One scruple or one gram, (b) one avoirdupois ounce or 30 grams, (c) one pound or one kilogram, (d) one fluid drachm or four millilitres, (e) one quart or one litre, (f) one yard or one metre.
- (5) Translate into English the following prescriptions and write appropriate directions:—

Bismuth subnit. . . . . ʒiij.  
Sod. bicarb. . . . . ʒij.  
Syr. aurant. . . . . ʒiv.  
Aq. menth. pip. . . . . ad ʒvi.

Ft. mistura. Signa: Cochleare magnum unum ex cyath, vinos. aquæ sextis horis sumend.

Potass. chlorat. . . . . ʒi.  
Ac. hydrochlor. . . . . mxl.  
Aq. . . . . ad ʒvii.

Fiat gargarisma chlorinatum. Signa: Cum tanto aqua frig. more dicto utend.

Explain briefly the method you would adopt to dispense these preparations.

## BUSINESS KNOWLEDGE AND SALE OF POISONS

(Time allowed—one hour)

- (1) (a) What is the significance of the following days and give the specific dates: 1, Christmas Day; 2, Lady Day; 3, Midsummer Day; 4, Michaelmas Day. (b) With what do you connect April 5?
- (2) Give a specimen ruling of a columnar cash book and enter therein the following:—

A. Clarke.

1939		£	s.	d.
Jan. 1.	Commenced business with cash in hand ..	300	0	0
	Paid into Bank ..	300	0	0
2.	Paid F. Allcock by cheque ..	70	0	0
3.	Banked—Cash sales ..	55	0	0
4.	Received cheque from S. Small for sales ..	20	0	0
	Allowed discount to S. Small ..	1	0	0
7.	Paid wages ..	10	0	0
10.	Paid by cheque J. Bull for goods ..	100	0	0
	Discount ..	2	10	0
14.	Paid Gas Company ..	5	0	0
	Paid wages ..	10	0	0
15.	Banked—Cash sales ..	70	0	0
19.	Paid by cheque A. McPherson ..	95	0	0
	Discount ..	2	5	0
20.	Paid by cheque P. Murphy ..	20	0	0
	Discount ..	10	0	0
21.	Paid wages ..	10	0	0
22.	Banked—Cash sales ..	60	0	0

1939		£	s.	d.
Jan. 29	Banked—Cash sales ..	65	0	0
	Paid wages ..	10	0	0
31.	Paid rent ..	20	0	0

Bring down the balance as at January 31, 1939.

- (3) (a) Give the conditions under which a signed order may be accepted from a purchaser of a poison in lieu of a signature in the Poisons Book; (b) what particulars must appear on such an order? (c) Give a specimen entry in the Poisons Book for such a transaction.
- (4) Draft specimen labels for the following goods when sold by retail:—(a) 100 tablets of thyroid B.P. gr.  $\frac{1}{2}$ ; (b) spirit of salts; (c) a hair lotion containing 3 per cent. lead acetate; (d) liniment of belladonna B.P.; (e) 2 oz. of an ointment containing 1 per cent. of opium.

## BOTANY AND PHARMACOGNOSY

(Time allowed—one hour)

- (1) Give an illustrated description of the details of a typical senna pod; and discuss the classification of this fruit as a "lomentum."
- (2) Enumerate the hormones known to affect plants, and describe their effects precisely.
- (3) Tabulate the differences and the similarities in the structure, as seen in smoothed transversely cut surfaces, of roots as compared with rhizomes. Examples which are commonly in use in pharmacy should be named as illustrations of the various points.

# Medical Abstracts

## Control of Hæmorrhage with Oxalic Acid

A DISCOVERY that oxalic acid makes possible the rapid coagulation of blood was demonstrated at a recent meeting of the Federation of American Societies for Experimental Biology by Steinberg and Brown. Applied in several hospitals, oxalic acid treatment was reported successful in almost 1,000 cases of unchecked bleeding resulting from a variety of causes. Intravenous injection of 3 mgm. of oxalic acid, dissolved in distilled water, stopped the hæmorrhages in periods varying from five minutes to forty-five seconds. The clinical cases included six cases of hæmophilia, in which the usual clotting time was from thirty minutes to two hours. The injections of oxalic acid reduced this time to five minutes. The treatment was applied "with gratifying results" to a wide variety of cases of excessive bleeding, including post-operative, post-partum and uterine hæmorrhages, hæmatemesis, bleeding gastric ulcers, jaundice, epistaxis, etc.

## Desoxycorticosterone in Addison's Disease

A PROCEDURE in administering a high-potassium low-sodium-chloride diet to a case of Addison's disease, whereby it is possible to evaluate the potency of suprarenal cortical extracts and their synthetic substances by estimating the concentration of urinary sodium, is described by Dryerre in the "British Medical Journal," May 13, p. 971. Previously, workers have been dependent mainly on clinical observations in evaluating accurately the efficiency of various therapeutic measures in cases of adrenal cortical insufficiency. Other investigators have attempted to assess the progress of patients by repeated biochemical blood tests, but this course has been found unreliable. The object of the present work was to find out the dose of (1) a standard cortical extract, (2) of desoxycorticosterone acetate (D.O.C.A.), that was necessary to restore the patient's urinary sodium content to a normal level. The subject on which tests were carried out was a known case of Addison's disease, having all the classical features of the condition, and who had been maintained for four years mainly by dietetic measures and large doses of sodium chloride with occasional specific cortical therapy. A table is given in the article which shows the sodium and chlorine content of the urine and blood following tests with (a) cortical extract injections, (b) D.O.C.A. injections, (c) D.O.C.A. implantations in the anterior abdominal wall, from which the potencies of the natural extract and its synthetic substitute were estimated. The present work has also shown that additional evidence has been obtained that D.O.C.A. can restore to normality a patient with Addison's disease, and that this effect can be greatly prolonged by the subcutaneous implantation of tablets of this substance.

## Trade Notes

**NEW DISPLAY STAND.**—Bell & Sons, Ltd., veterinary chemists, Silverdale Works, Liverpool, 13, have designed a new display stand for their pet remedies, and a photograph of it is reproduced herewith.



**SUBA-SEAL CLOSURES.**—William Freeman & Co., Ltd., Britannia House, Wellington Street, Leeds, claim that their Suba-seal closures have advantages over ground glass stoppers, e.g., they are interchangeable, unbreakable and easily fitted. The Suba-seal is completely airtight and is so designed as to prevent any leakage or evaporation. These closures, moreover, are made to withstand acids

and alkalis, and there are special grades where oils and solvents are in use as well as an odourless and taintless grade for essences and food products. When in use the serrations which form annular grooves on the plug part of the closure are depressed against the inside of the bottle neck or containers, thereby

making each groove a vacuum seal. The turning over of the outside flange promotes double sealing in so far as the natural contraction of the rubber firmly grips the outside of the bottle neck and makes an effective seal. Suba-seals are available in a wide range of sizes from those suitable for carboys to small tubes and vials.

**KOLYNOS BONUS.**—Kolynos (Sales), Ltd., 12 Chenies Street, London, W.C.1, are making a bonus offer in connexion with their denture fixative. Further details will be found in the company's advertisement in this issue.

**MILK FOR STORAGE.**—Allen & Hanburys, Ltd., Bethnal Green, London, E.2, remind chemists that A. & H. full cream dried milk is suitable for emergency storage as suggested by the Food (Defence Plans) Department of the Board of Trade. The contents of one tin is sufficient to make six pints of milk suitable for general domestic use in place of dairy milk. The dried milk is supplied in 1-lb. hermetically sealed tins.

**PIFCO SHOWCARDS.**—Provincial Incandescent Fittings Co., Ltd., Pifco House, Watling Street, Manchester, 4, have sent us specimens of their new Pifco priced display showcards, which are available free to the trade. Those of chief interest to chemists are the electric massager and infra-red lamps. These showcards, which are printed in the recognised Pifco four colours, will be supplied free on request to all bona-fide dealers stocking Pifco products, whether purchased direct or through their usual wholesalers.

## Insurance Act Dispensing

### ENGLAND AND WALES

**Hull.**—Statistics given at a meeting of the North of England Joint Insurance (Prescriptions) Committee, held recently at Hull, show that the average total cost of prescriptions issued in Hull between January and the end of March was 8.7d. (average for the north, 8.2d.). Insured persons receiving medicine from chemists totalled 126,349, and the average total cost per insured person was 13.5d. From December 1, 1938, to March 31 this year 249,473 prescriptions were issued (value £9,128). The number of prescriptions received for pricing in the area during the four months under review was 2,075,965, compared with 1,962,516 during the corresponding period of the previous year, representing an increase of 113,451, or 5.8 per cent. The total cost, including ingredient costs and dispensing fees, was £71,692. The average cost per insured person had gone up from 11d. to 11.2d.

**Norwich.**—A recent report to the Insurance Committee gave the number of chemists on the Committee's list as thirty-three (with thirty-nine shops). Ten tests had been made of drugs, etc., supplied to insured persons. Resulting from these, the subcommittee had recommended that one chemist should be cautioned and another should be cautioned and warned. Insured persons in the city now number 59,178. In the first three months of the present year 59,348 prescriptions were issued (a record). In February, the busiest month, 21,846 prescriptions were dealt with.

**Preston.**—The pharmaceutical service subcommittee of the Insurance Committee has recommended that sums of money should be withheld from two chemists in the area in respect of test medicines found inaccurate. In one there was a deficiency, and in the other an excess of a particular ingredient. A member pointed out that in regard to the second no further action had been taken in previous tests and suggested that the chemist concerned should be warned. The chairman of the subcommittee replied that the members were of opinion that gross carelessness had been shown. There was no second to the amendment and the recommendation was approved by the Committee.

**Somerset.**—At a recent meeting at Weston-super-Mare of the Somerset Insurance Committee it was reported that a chemist had dispensed mist, tuss, sed, in error for mist, tuss. Being impressed by the straightforward explanation given by the firm who later in the day, having realised the mistake,

took immediate steps to notify the Committee of the fact, a subcommittee recommended that no action be taken. The Committee decided that no action should be taken, but the Ministry over-rode them and imposed a fine of £1. It was eventually agreed to refer the matter to the Pharmaceutical subcommittee.

**Southport.**—At a recent meeting of the Insurance Committee an item in the annual report of the South-West Lancashire and Cheshire Joint (Prescriptions) Committee, in which it was stated that one patient had received during a period of nine months, drugs to the value of £225, was the subject of comment. One member expressed the view that it was astonishing that a patient should be still alive after swallowing such a quantity of medicine.

**Staffordshire.**—Total payments in respect of drugs and appliances for the year 1938 totalled £43,382, of this £39,153 was paid to chemists. During the quarter ended March 31, 340,859 prescriptions were dispensed at a cost of £11,526 compared with 328,995 and £11,068 in the corresponding period of the previous year. A chemist who was found to have dispensed a prescription for collyr. zinci co., 6 fl. oz. with an excess of 22 per cent. zinci sulph., was recommended to be fined £2, in view of previous cases in 1931 and 1936.

**Surrey.**—The report of the Pharmaceutical Committee for the County of Surrey for the twelve months July 1, 1938 to June 30, 1939, records that the present year is the Silver Jubilee of the Committee. Two members of the first committee still serve, one of them (Mr. Burland) having just occupied the office of chairman, a fitting selection for the twenty-fifth year. The other original member is the secretary, who has held the position since the inception of Pharmaceutical Committees. The following table gives comparative statistics for the area during the last two years:—

	1938	1937
Prescriptions dispensed	1,453,577	1,418,069
Ingredient prices	£30,024	£27,239
Fees	£26,359	£25,982
Average total of insured persons	390,502	368,221
Average cost per prescription	9.3d.	9.0d.
Average cost per insured person	34.7d.	34.7d.

## Trade-Mark Applications

The figures in parentheses refer to the classes in which the marks are grouped. A list of classes and particulars as to registration are given in "The Chemist and Druggist Diary and Year-Book," 1939, p. 342.

(From "The Trade Marks Journal," July 5, 1939)

"IMMINASTHME"; for pharmaceutical preparations for asthma (5). By C. F. Boehringer & Soehne G.m.b.H., Sandhofstrasse 112 to 132, Mannheim-Waldhof, Germany. 606,142. [Corrected note.]

(From "The Trade Marks Journal," July 19, 1939)

### SCHEDULE IV

"ABORTULIN"; for veterinary preparations (5). By Abortulin, Ltd., Alderman's House, London, E.C.2. 607,224.

"VISADRON"; for medicinal and pharmaceutical preparations (5). By C. H. Boehringer Sohn, Bingerstrasse 173, Ingelheim a. Rhein, Germany. 607,399.

"LATIBON"; for all goods (5). By Bayer Products, Ltd., 31 to 34 Basinghall Street, London, E.C.2. 607,377.

### APPLICATION AMENDMENTS

The specification for "BELARA" in Class 3, Schedule IV, No. 603,916, by B. Laporte, Ltd., has been amended to exclude toilet or perfumed soaps.

The specification for "AMATIN" in Class 3, Schedule IV, No. 605,378, by H. R. Napp, Ltd., has been amended to exclude "preparations for the treatment of burns analgesics, sedatives and hypnotics."

(From "The Trade Marks Journal," July 26, 1939)

### SCHEDULE IV

DEVICE OF PALM TREE AND ANCHOR; for photographic chemicals, etc. (1). By Naamlooze Vennootschap A. O. Meyer, Heerengracht 256, Amsterdam, Holland. 607,480.

DEVICE WITH MONOGRAM "C.H.F."; for industrial and photographic chemicals (1). By C. H. F. Müller, A.G., 24 Röntgenstrasse, Hamburg, Germany. B604,849.

"BOLERO"; for perfumery, etc. (3). By Parfums Dana, S.A., 9 Rue de la Paix, Paris, France. 607,234.

"FUMO"; for preparation for treatment of smoking habits, for sale in Scotland (5). By R. Dickson, 116 New City Road, Glasgow, C.4. B605,529.

"UNANY"; for medicinal oils for rheumatism (5). By A. M. Dead, 5 Ribblesdon Lane, Preston. 606,675.

"RAL EVAPO"; for veterinary medicines (5). By H. R. Jones, Pavement Mews, rear of 649 High Road, Seven Kings, Essex. 606,731.

ILLUSTRATION OF THREE MONKEYS PLAYING DICE; for pharmaceutical, veterinary and sanitary substances, plasters, disinfectants and preparations for killing weeds and destroying vermin (5). By J. Bolton & Co., Ltd., 34 Pridcess Street, Manchester, 1. 606,845. (Associated.)

"SANO" over signature of "John F. J. Moore" (word "sano" disclaimed); for herbal preparations (5). By Northern Counties Drug Co., Ltd., 146 Vine Place, Rochdale. 606,977. (Associated.)

"DOMITOR"; for medicinal and pharmaceutical preparations (5). By R. Turner Bell, 9 Woodbine Street, South Shields. 607,398.

"CALENO"; for antipyretics, diaphoretics, analgesics and sedatives. By J. C. Edo, Ltd., 160 Piccadilly, London, W.1. 607,162.

"EVAS"; for compresses for rheumatism (5). By Eva Calthorpe, 30 Vanda Crescent, St. Albans, Herts. 607,242.

"GWENDA"; for baby soothers (10). By A. S. Cartwright, Ltd., Western Road, Dudley Road, Birmingham, 18. 607,456.

(From "The Trade Marks Journal," August 2, 1939)

### SCHEDULE IV

Device of head within black circle; for photographic and agricultural chemicals (1). By Naamlooze Vennootschap A. O. Meyer, Heerengracht, 256, Amsterdam, Holland. 607,479. (Associated.)

"VHIZ"; for shaving cream (3). By D. & W. Gibbs, Ltd., High Street, London, E.1. 607,227.

"GWENDA"; for cosmetic powder boxes and cases (3). By Hussey, Dawson & Co., Gwenda Works, Legge Lane, Birmingham, 1. 607,457. (Associated.)

"AQUAMANDA"; for perfumery, etc. (3). By D. R. Collins, Ltd., 4 Whitehorse Street, London, W.1. 607,511.

"TODDILOX"; for hair-curling and waving lotions (3). By Maureen Baun, Ltd., 27 Union Street, Bury. 607,701.

"SWIFTSURE"; for laxative chocolate (5). By Parkinsons, Ltd., Curzon Street, Burnley. B605,452. (Associated.)

"GAS-TROY"; for liquid insecticide (5). By Thos. Powell, Pace & Son, 253 Norbreck Road, Blackpool. 605,510.

"MONOX"; for a veterinary medicine for aphthous stomatitis (5). By Paul Ooms, 7 Rue Michel Theys, Diest, Belgium. B606,038.

"KARVONN"; for pharmaceutical substances, etc. (5). By W. J. Owen, 1 Victoria Street, Caernarvon. 606,817.

"RINGTRACK"; for medicated, sanitary and veterinary preparations (5). By Red Tonic, 321 Mansfield Road, Nottingham. 606,870.

"PROPIVAN"; for pharmaceutical veterinary and sanitary substances (5). By May & Baker, Ltd., 42 St. Paul's Churchyard, London, E.C.4. 606,902.

"MARRSONA"; for medicinal and pharmaceutical preparations, etc. (5). By Midgley & Parkinson, Ltd., Warren Works, Swinnow Lane, Pudsey, Leeds. 607,047. (Associated.)

"SUPAVITE"; for medicated vitamin tablets (5). By The Angier Chemical Co., Ltd., 86 Clerkenwell Road, London, E.C.1. 607,174.

"DEFENDEL"; for insecticides and medicines, etc. (5). By Couper, Friend & Co., 33 Eastcheap, London, E.C.3. B607,238.

"KALMACONES"; for medicinal preparations (5). By Bailly, Ltd., 24 Fitzroy Street, London, W.1. 607,318.

"SUNECTADEX"; for medicated beverages (5). By Sunecta Fruit Juice Co., Corporation Street, Madsfield. 607,735. (Associated.)

## Marriages

DOWNIE—CHRISTIE.—At Springburn, Glasgow, on July 25, James Walker Downie, M.P.S., to Annie Langlands Christie.

PATON—MORTON.—At the Royal Hotel, Ladybank, on August 2, Robert Paton, M.P.S., Kingskettle, Fife, to Helen Morton.

MORRISON—REID.—On July 31, Murdoch M. Morrison, M.P.S., 153 New City Road, Glasgow, to Susan D. Reid, M.P.S., Glasgow.

REES—REEVES.—At St. Luke's Church, Charlton Village, London, S.E., on August 4, Harding B. Rees, M.P.S., son of Mr. H. Miles Rees, Ph.C., 141 Anerley Road, London, S.E.20, and representative of Evans Sons Lescher & Webb, Ltd., manufacturing chemists, Liverpool, to Marjory Emily, daughter of Mr. James H. Reeves.

## Deaths

BAGSHAW.—At 43 Montefiore Road, Hove, on August 4, Mr. George William Bagshaw, M.P.S., formerly of Lawrence Hill, Bristol, aged seventy-three.

IDRIS.—At 35 Cholmeley Park, Highgate, London, N., on August 7, after a brief illness, Mr. William Trevena Williams Idris, M.P.S., barrister-at-law, chairman and managing director of Idris, Ltd., mineral water manufacturers, Pratt Street, N.W.1, aged sixty-four. Mr. Idris was the eldest son of the late Mr. T. H. W. Idris, a past-president of the British Pharmaceutical Conference, who founded the business of Idris, Ltd., in 1873.

PICKLES.—At Newquay, Cornwall, on July 31, Mr. Charles Pickles, M.P.S., Strait Top, Dalry, Ayrshire. Mr. Pickles qualified in 1909.

## Personalities

MR. H. EYMER, M.P.S., 53 Greengate Street, Stafford, gave a paper on "Drugs and their use in modern practice" to the local rotary club recently.

DR. GEORGE SENTER, Ph.C., has been appointed a member of the South Eastern tribunal for conscientious objectors under the Military Training Act.

DR. JAMES COURTS, Ph.C., St. Bartholomew's Hospital, London, E.C.1, is sailing on the "Samaria" from Liverpool on August 26 for a holiday in the United States and Canada.

MR. M. N. CAMA (Cama Norton & Co., wholesale chemists and distributors, Bombay), is staying in London for the next two weeks and may be addressed c/o THE CHEMIST AND DRUGGIST.

MR. H. RENSHAW CLARKE, M.P.S., F.Z.S., has been appointed general manager of Robert Ferber, Ltd., manufacturing chemists, Charlton Works, Asylum Road, Peckham, London, S.E.15.

MR. THOMAS F. HOLMES, M.Sc., Wallington, Surrey, son-in-law of Mr. Henry C. Meyrick, L.P.S.I., M.P.S., London, S.W.1, has obtained the degree of Doctor of Philosophy at Durham University.

MR. JOHN CAMERON, M.P.S., of Peking Union Medical College, China, has been on a tour in Manchukuo, Korea and Japan. Mr. Cameron has written to us from an interesting hotel, commanding a remarkable view, at Miyanosita, Hakone, described as being an hour and a half from Yokohama.

MR. JOHN SINCLAIR, M.P.S., The Georgetown Dispensary, Ltd., chemists, Ipoh, F.M.S., was appointed Past Grand Deacon at a meeting of Grand Lodge, held in London, recently; he has also been appointed Past Asst. Sojourner in Grand Chapter. Mr. Sinclair is a Past Master of 3357 and 3212 and Past Z. of Chapter 3212 and Past Deputy District Grand Master of the Eastern Archipelago and Past 2nd Grand Principal of the District Grand Chapter of the same district.



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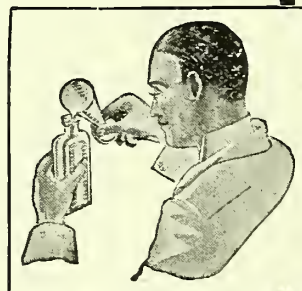
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## THE CHEMIST AND DRUGGIST

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## Information Department

### INFORMATION WANTED

- |  |   |
|--|---|
| G/19 Diethyl ester of adipic acid              | H/87 Kero-tar Shampoos (present makers) |
| M/78 Eau de Vals                               | S/68 Mageka perfumes (present address)  |
| G/98 Esmolin Liniment (present address)        | E/88 New Mown Hay perfume               |
| G/19 Ethyl ester of normal chlor. butyric acid | E/88 Salicyl                            |
|  | S/98 Swelda macassar oil                |

# THE CHEMIST AND DRUGGIST

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## Our Educational Issue

IN our issue of this week we give, as is customary at this time of the year, a summary of the regulations relating to the training of pharmacists. It is well to remind the generation of pharmaceutical students who are now on the way to their qualification of the steps by which the present scheme of training has been developed.

Up to 1919 training for the examinations of the Pharmaceutical Society lay entirely at the option of the student himself. He might or might not, as he chose, pursue any course of training. Usually, such courses were offered by institutions run for profit by private individuals. Only three schools of pharmacy were maintained by public bodies, namely, the School of Pharmacy of the Pharmaceutical Society, the Pharmacy Department of Manchester University and the School of Pharmacy of Robert Gordon's College in Aberdeen. Not infrequently candidates presented themselves for examination without any previous tuition.

The return to civil life of large numbers of ex-Service men afforded a two-fold opportunity to the Pharmaceutical Society to enforce a curriculum prior to examination and to some governors of technical colleges to institute full-time courses of instruction, and fully staffed and equipped departments of pharmacy in the colleges under their care. As was to be expected, the staff was, at first, inadequate, and the equipment meagre. As the demands of the Society were clarified, these defects were remedied, and to-day most of the schools of pharmacy are excellently furnished and staffed with competent and enthusiastic teachers.

Parallel with this development there has followed an increase in the length of the course. New subjects, such as physiology, have been added and the older subjects are taught much more thoroughly than they could be in shorter courses. As the readers of our pages will note, it is now required that the candidate for the chemist and druggist qualifying examination shall have passed two, and for the Ph.C. examination three, years of academic study before

qualifying. The gains of this scheme of education are already great. There is an "esprit de corps" among pharmacists of to-day such as has not been known before. When students were perforce compelled to spend all their student hours and days in strict application to study, there was no opportunity for the development of social ties. To-day the social life of the colleges is regarded as of importance scarcely less than that of the teaching. Students come to know, not only their own immediate confrères, but also workers in other faculties and departments. The pharmacist of to-day and to-morrow should be of wider vision and bear a greater sense of social responsibility than did his predecessors. That is a gain the fruits of which will be garnered more in the future than in the present. Undoubtedly the prestige of pharmacists has been greatly enhanced by the more thorough quality of their training.

While these consequences of the Society's policy are acknowledged it must be admitted that, judged by examination results, the issue is more disappointing. The percentage of passes in the Preliminary Scientific and Chemist and Druggist qualifying examinations is still too low. That this should be the case is a question for the most careful investigation. Is pharmacy attracting the type of student who can stand up to the strain of a prolonged course of study? Is there any fault with the teachers of pharmacy? Is the manner of the examination faulty? Is the syllabus laid down too heavy for the time allowed? It is to these questions that we must look for a solution of the problem which we have stated. Until the solution is found the prestige of pharmacy must suffer.

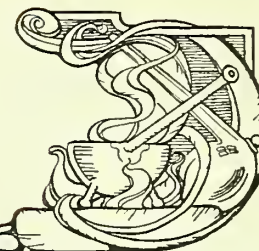
## Whichever is the Greater—II

H.M. CUSTOMS have this week informed the importers concerned of their decision in the dispute which arose last June as to the correct classification and amount of duty payable on imported white camphor oil. We dealt with the subject editorially in our issue dated July 1 (p. 12), and explained that, up to that time, imports had, without exception, been declared as liable to the light hydrocarbon oil tax of ninepence per gallon, but when the value of white camphor oil increased from about 60s. to as much as 200s. per cwt., Customs declined to accept further entries on the basis of ninepence per gallon duty and ruled that this product was liable to the 10 per cent. general *ad valorem* duty. The amount of duty demanded under this unexpected decision is, on a value of 200s. per cwt., c.i.f., much more than that payable under the light hydrocarbon oil duty. The importers naturally disputed the departmental ruling, and they have now been advised to the effect that . . . "the consignments have been found not to be substantially hydrocarbon oils and that the correct rate of duty chargeable is 10 per cent. *ad valorem*."

The importers have no alternative but to accept the department's ruling, whatever they may think of it. They, and the trade generally, are, however, entitled to a much more definite ruling for their future guidance than that given in the official notification. In what classification for duty purposes are importers to enter white camphor oil in future? If this product is properly liable to the 10 per cent. *ad valorem* duty it would appear that for some years past Customs have demanded and collected an excessive rate of duty. Further, as white camphor oil is not produced or manufactured within the Empire, importers are entitled to apply for it to be put on the Free List under the Import Duties Act, 1921.



# EDUCATIONAL INFORMATION



## Pharmacy 1—GREAT BRITAIN

**DEFINITION.**—Under the Pharmacy and Poisons Act, 1933, the titles "pharmaceutical chemist" and "pharmaceutist" are restricted to persons who are registered as pharmaceutical chemists, and the titles "chemist and druggist," "druggist," "pharmacist" or "member of the Pharmaceutical Society" to persons who are registered as pharmacists. It is not permitted to use the title "chemist" in connexion with the sale of goods by retail unless the user is similarly registered. Registration as a pharmacist or as a pharmaceutical chemist is effected as the result of a sequence which includes notification to the Pharmaceutical Society that the applicant has passed an approved Preliminary examination; registration as a student; serving an indentured apprenticeship; passing a Preliminary Scientific examination and, subsequently, one of two Qualifying examinations.

**APPRENTICESHIP.**—The apprenticeship of a person intending to become a pharmacist is according to an indenture in terms approved by the Pharmaceutical Society, and comprises a minimum of 4,000 hours served in a registered pharmacy or approved institution (for Chemist and Druggist Qualifying examination) or 2,000 hours (for Ph.C. qualification).

**EXAMINATIONS.**—The Preliminary examination, taken before apprenticeship, is a test of general education, and is of standard equivalent to matriculation at a recognised University. The Preliminary Scientific is an examination in chemistry, biology and physics. The Chemist and Druggist Qualifying examination is in physiology, pharmacognosy, pharmaceuticals, pharmaceutical chemistry and forensic pharmacy. The Ph.C. Qualifying examination is in the same subjects as the Chemist and Druggist, but the standard is higher. Fuller details of these examinations and the other matters here summarised are given later.

**OPPORTUNITIES.**—A registered pharmacist may (1) set up in business for himself; (2) become manager or employee in the retail business of another registered pharmacist or corporate body; (3) take up a position as pharmacist in a hospital or institution; (4) enter the wholesale or manufacturing side as works chemist or in an administrative or other capacity; (5) enter the teaching profession in a pharmaceutical college.

The examinations of the Pharmaceutical Society are written and practical, with an oral test in pharmacy. The syllabus is now stabilised, and no exceptions are allowed without direct application to the Pharmaceutical Council. Zoology and physiology are part of the syllabus and are subjects in the appropriate examinations. It would appear that the form of examination in these subjects has not yet reached finality.

Provision is made to hold the written portions of the Pharmaceutical Society's examinations at convenient provincial centres. The practicals take place in London and Edinburgh only, and are arranged to follow the written as soon as practicable. Students who have passed recognised science exam-

inations equivalent to the Preliminary Scientific have many advantages and a good foundation is laid for future progress. Students who take the Preliminary Scientific early may be included in the same class. Full-time collegiate training is compulsory; and attendance must satisfy the governing authorities. Though matriculation is not the only examination accepted for entrance into pharmacy, it has most in its favour. No practical course of study or approved course of instruction or part thereof undergone before registration as an apprentice or student can be recognised under the regulations.

The schools recognised for the training of students to University standard are now reasonably numerous, and no increase is likely. The Preliminary Scientific is on the same basis as the First Science of London University. The only difference between the Ph.C. examination and the B.Pharm. examination is that forensic pharmacy is a subject in the former.

It is recommended that full use should be made of the rules for practical course of study appended to the Draft Articles of Pupilage, while eligible students are advised, as a sound method of beginning a career, to train and enter for the scholarships now available.

### Preliminary Examinations

The first step on deciding to take up pharmacy is to pass a Matriculation or other examination admitting to a course for a degree of any university in Great Britain or other university approved by the Pharmaceutical Council, or pass at one sitting the medical preliminary of the College of Preceptors or the Educational Institute of Scotland, of which mathematics must be one of the subjects. If before April 1, 1936, a Preliminary was passed which included English, mathematics, a language other than English, an additional language or higher mathematics, chemistry, physics, botany, zoology, biology or geology, the Registrar is empowered to accept the certificate if passed at not more than two sittings.

A person over twenty-five years of age may apply to be admitted to a special Preliminary examination, but he must furnish such particulars of his education as the Council of the Society may require. The fee, including registration as apprentice or student, is £4 4s. In general terms, certificates submitted must be of equal value to those specified in the list, which is given below. Any student entering pharmacy and desirous of obtaining a university degree must pass its matriculation examination.

### CERTIFICATES ACCEPTED

The following is a list of the principal certificates accepted:—

The Final examination for a degree of any university in the United Kingdom approved by the Council.

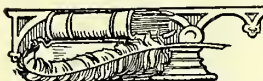
*Universities of Birmingham, Leeds, Liverpool, Manchester and Sheffield.*—School Certificate examination.

*University of Oxford.*—Responsions.

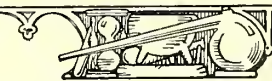
*University of Cambridge.*—Previous examination.

### Chemist and Druggist and Pharmaceutical Chemist Qualifications (in brief)

1. Notification and registration with the Pharmaceutical Society of having passed an approved Preliminary examination.
2. Apprenticeship (indentured), of 4,000 or 2,000 hours (for Ph.C.) to include practical training set out in appendix to indentures.
3. Preliminary Scientific examination in chemistry, physics, and biology after attendance at recognised institution for systematic instruction. (May be taken before apprenticeship.)
4. On completion of apprenticeship and passing of Preliminary Scientific examination attendance at recognised institution for approved course of instruction in pharmaceutical chemistry, pharmacognosy, pharmaceuticals, physiology, and forensic pharmacy (duration varying according to examination to be taken).
5. At age of 21 or after, Chemist and Druggist Qualifying examination in pharmaceuticals, pharmaceutical chemistry, pharmacognosy, physiology, forensic pharmacy; or Pharmaceutical Chemist qualification in same subjects (higher standard).



## Educational Information



*University of Durham.*—Matriculation examination. First School Certificate examination. Higher School Certificate examination.

*University of London.*—Matriculation examination. General School Certificate examination. Higher School Certificate examination.

*Victoria University of Manchester, University of Birmingham, University of Liverpool, University of Leeds, and University of Sheffield, Joint Matriculation Board of.*—Matriculation examination, School Certificate examination. Higher School Certificate examination.

*University of Bristol.*—Matriculation examination, School Certificate examination, Higher School Certificate examination.

*University of Wales.*—Matriculation examination.

*Scottish Universities Entrance Board.*—Preliminary examination.

*Queens University of Belfast.*—Matriculation examination.

*National University of Ireland.*—Matriculation examination.

*Oxford and Cambridge Schools Examination Board.*—School Certificate examination, Higher School Certificate examination.

*Oxford Delegacy of Local Examinations.*—School Certificate examination, Higher School Certificate examination.

*University of Cambridge Local Examination Syndicate.*—School Certificate examination, Higher School Certificate examination.

*Central Welsh Board.*—School Certificate examination, Higher School Certificate examination.

*Scottish Education Department.*—Leaving Certificate examination.

*Ministry of Education of Northern Ireland.*—Senior Certificate examination.

*Department of Education of the Irish Free State.*—Leaving Certificate examination.

*College of Preceptors.*—Senior examination, Medical Preliminary examination.

*Educational Institute of Scotland.*—Medical Preliminary examination.

And matriculations of various universities throughout the Empire.

*College of Preceptors, Bloomsbury Square, London, W.C.1.*—Examinations for certificates are held four times a year at local centres, a list of which is issued two months before each examination. Entry forms, obtainable from the secretary of the College, must be filled up and returned six weeks before the day appointed for the examination. On the form the candidate indicates the subjects in which he desires to be examined, those required for pharmaceutical students being mentioned at the beginning of this section. The fees are best sent with the entry forms, but, if not, must be paid twenty-eight days before the examination begins. Candidates should obtain the regulations for examinations (post free) from the Secretary of the College, as the books to be studied in some of the subjects vary from year to year. A complete set of papers at previous examinations can be obtained from the College at 2s. 2d. post free.

*Educational Institute of Scotland (Registrar's Office, 47 Moray Place, Edinburgh).* Examinations are held four times a year in Edinburgh, Glasgow, Liverpool, London and Dublin. The fee is £1 10s., which should be sent to the Registrar with the form of application duly filled in. The Institute issues a calendar giving the regulations, price 7d. post free, and examination papers, price 1s. 2d. post free, obtainable from the Registrar.

### Registration

A certificate of having passed a preliminary examination complying with the conditions having been obtained, it should be sent to the Registrar, the Pharmaceutical Society, 17 Bloomsbury Square, London, W.C.1, accompanied by a fee of £2 2s., the student being then registered as an "apprentice or student." Registration is insufficient in itself. Articles of pupilage, copies of which can be obtained from the Registrar at the same time, must be taken up and filed. Apprenticeship may be served with a pharmacist, firm or body corporate, or

in an institution recognised by the Council of the Pharmaceutical Society, or in the laboratory of a wholesale house subject to the same approval. A practical course of training is now mapped out and is attached to the indentures, of which it is thus an integral part. The number of hours required to be spent in an open shop or approved institution is 4,000. A recognised course of study must be taken before the Preliminary Scientific examination can be undertaken; a further period is necessary for the Qualifying examination.

### The Technical Examinations

The Board of Examiners sits in London and Edinburgh in January, April, July and October for the purpose of conducting the statutory practical and any oral examination recognised. Prior to these times the written portion of the examinations must be taken at the appropriate centres. For the Pharmaceutical Chemist examination the Board sits in January and July only. The first part, called the Preliminary Scientific, includes biology, chemistry and physics. The second part includes pharmacognosy, pharmaceuticals, pharmaceutical chemistry, physiology and forensic pharmacy. Its specific name is the Chemist and Druggist Qualifying examination. For the purpose of simplification the Pharmaceutical Chemist qualification is dealt with separately under that heading.

#### 1. Preliminary Scientific

The Preliminary Scientific should be taken between the ages of eighteen and twenty-one, and may be taken before apprenticeship; the Qualifying examination can only be taken after the age of twenty-one has been reached.

The examination is the same whether it is intended to become a chemist and druggist or a pharmaceutical chemist, and extends over three and a half days.

The fee payable for the Preliminary Scientific is £6 6s., and the conditions are: The candidate must have spent the requisite academic terms in an institution approved for the purpose by the Pharmaceutical Society's Council. If a candidate is referred in one subject only he may re-enter for that alone. Two "refers" are equivalent to a failure in all. In addition, the Board of Examiners has now the power to impose further conditions (periods of study) on those who failed to satisfy the Board. The re-examination fee is £4 4s. A candidate who has failed to attend an examination at the appointed time must pay an additional fee of £2 2s. unless prior to the examination a medical certificate of unfitness is lodged with the secretary of the Pharmaceutical Society.

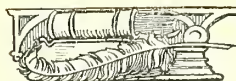
#### SYLLABUS

The official syllabus of the Pharmaceutical Society for the Preliminary Scientific is set out, though examinations in lieu of this may be taken in approved institutions.

#### CHEMISTRY

An elementary knowledge is required of the following subjects:—

(a) The chief characteristics of chemical action, the distinction between elements and compounds; the laws of chemical combination by weight and volume; the hypothesis of Avogadro; kinetic theory of gases; theory of dilute solutions; ionisation; conductivity; acids, bases; solubility product; osmotic pressure; Raoult's law; chemical equilibrium and law of mass action; endothermic and exothermic reactions; equivalent weight; atomic weight and molecular weight; chemical formulae and nomenclature; valency; the distinction between metals and non-metals, and the periodic classification of the elements. (b) The general characters of the non-metals; the chief methods of preparation and the typical reactions of the following non-metallic elements and compounds: Hydrogen, oxygen, ozone, water, hydrogen peroxide, chlorine, bromine and iodine and their compounds with hydrogen and oxygen; fluorine, hydrofluoric acid, nitrogen, ammonia and ammonium compounds, the oxides of nitrogen, nitrous acid, nitric acid; sulphur, hydrogen sulphide, sulphurous and sulphuric anhydrides and acids, thiosulphuric acid; phosphorus, phosphine, the oxides and oxy-acids of phosphorus, the chlorides of phosphorus, silicon, silica, boron, boric acid. (c) The general characters and classification of the metals, and the general methods of forming oxides and salts; the sources, the general methods of extracting and the chief properties of the undermentioned metals, also the modes of preparation and properties of their principal



## Educational Information



compounds: Potassium, sodium, lithium, barium, strontium, calcium, magnesium, zinc, aluminium, iron, chromium, manganese, nickel, cobalt, arsenic, antimony, tin, copper, cadmium, bismuth, lead, silver, mercury, gold and platinum. (d) Carbon, its oxides; methane, ethylene and acetylene. The methods of estimating carbon, hydrogen, oxygen, and nitrogen in organic compounds, and of obtaining molecular formulae. The candidate is expected to solve simple problems relating to the weight and volume under different conditions of temperature and pressure of elements and compounds concerned in chemical reactions.

The whole of the syllabus in chemistry is to be treated in an elementary manner and as far as possible experimentally.

**Practical Examination.**—The candidate is required to exhibit a practical acquaintance with the methods of preparing the more important inorganic substances. To identify by chemical tests the more important non-metallic elements and their compounds, as well as the metals and salts indicated in the foregoing list. To analyse a mixture containing not more than two basic and two inorganic acid radicals. To be able to weigh accurately on a standard analytical balance involving the use of a rider. To show a knowledge of the principles of volumetric analysis and to prepare, standardise and use volumetric solutions of inorganic acids, alkalis, potassium permanganate, and silver nitrate.

### BIOLOGY

This subject comprises botany as Part I and zoology as Part II.

**PART I.—BOTANY.**—The form and function of the roots, the stem and the leaves of a green herbaceous plant and of a woody perennial plant and the effect of environment on their anatomy. The modifications of plant organs for special functions. The structure of the plant cell. Cell division. The structure, arrangement and functions of the tissues of Angiosperms. The structure of a typical flower and the function of its various parts. The fruit. The structure, dispersal and germination of seeds. The elementary facts of growth and nutrition, including photosynthesis and respiration, and a consideration of the physiology of heterotrophic plants. The commoner foods found in plants; their digestion and utilisation. A general knowledge of the chief divisions of the vegetable kingdom as exemplified by a study of the life history, structure and reproduction of the following:—

*Chlamydomonas*, *Spirogyra*, *Fucus*, *Mucor*, *Agaricus*, *Dryopteris filix-mas*, *Pinus* and an Angiosperm. The principles of taxonomy as illustrated by a study of the following families of Angiosperms: *Ranunculaceæ*, *Leguminosæ*, *Umbelliferae*, *Solanaceæ*, *Compositæ*, *Liliaceæ*.

**Practical Examination.**—The dissection, examination and description (exclusive of identification) of any plants or parts of plants. The making of microscopical preparations and the description of preparations illustrating the anatomy of plants. The conduct of, or comment on, experiments illustrating the fundamental life-processes of the plant.

**PART II.—ZOOLOGY.**—The structure and properties of the cell and the general characters and functions of the tissues including the epithelia, blood and lymph, and the nervous, muscular, connective and skeletal tissues. The general structure, physiology and life history of *Amœba* and *Paramœcium*. A comparison of these with plants. An outline of parasitism as illustrated by the life history of the malarial parasite and liver fluke. The general structure, vital activities and life history of *Hydra* and *Lumbricus*, as illustrative of diploblastic and triploblastic invertebrata. The general structure and life history of *Blatta* as illustrative of insect organisation and development. The structure, life history and elementary physiology of vertebrata as illustrated by *Rana* (excluding the skeleton) and *Lepus*. The general phenomena of sexual and asexual reproduction of animals. The history and characters of the germ cells, the chief types of segmentation of the fertilised ovum. The outline of the embryology of the frog and the chick. The elementary facts of heredity, variation and evolution.

**Practical Examination.**—The dissection, microscopical examination and description of specimens or parts of the animals mentioned above.

### PHYSICS

Velocity, acceleration, mass, momentum, force, work, energy, gravity, centre of gravity; simple machines; pressure

in liquids, the siphon, water pumps; principle of Archimedes. Boyle's law, compression and exhaust pumps; atmospheric pressure; surface tension; diffusion, osmosis. Temperature; thermometry; changes in volume of solids, liquids and gases with alterations of temperature; quantity of heat, specific heat; change of state, latent heat; melting and boiling points; vapour pressure; hygrometry; conduction, convection and radiation; relation between heat and work. Photometry; laws of reflection and refraction; formation of images by plane and spherical mirrors and lenses; the eye as an optical instrument; defects of vision and their correction by lenses; action of prisms on light; dispersion, colour. Properties of magnets; magnetic field, lines of force; law of force; the earth as a magnet. Simple phenomena of static electricity; potential, induction, distribution of electrification of conductors; influence machines; capacity; principle of condenser, Leyden jar. Electric currents, magnetic, chemical and heating effects; primary and secondary cells; current strength; electromotive force; Ohm's law; resistance, specific resistance; galvanometers, ammeters and voltmeters; metre bridge; potentiometer; induced currents.

**Practical Examination.**—Simple exercises illustrating the above, including:—Use of vernier, screw-gauge, balance, hydrometer; measurement of time and oscillation. Determination of volumes by weighing in air and water; densities, specific gravities of solids and liquids; verification of Boyle's law. Determination of coefficients of expansion, melting points, boiling points, specific heats, latent heats, dew point. Tracing paths of rays; determination of refractive indices by slab and prism; focal lengths of mirrors and lenses. Tracing lines of force. Measurement of time of swing of a magnet; comparisons of magnetic moments and of field strengths. Comparison of electromotive forces and resistances. Use of galvanometer, ammeters and voltmeters. Electrolytic measurements.

### EXTERNAL EXAMINATIONS IN PHARMACY

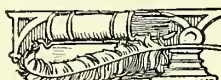
Apart from the examinations of the Pharmaceutical Society's examiners as set out in the above syllabus, there is a proviso for the acceptance of certificates in lieu of the Preliminary Scientific. They are: (1) The Final or Intermediate examination of any University in England and Wales, and the corresponding examinations of any University in Scotland or any other university, providing the examinations have been approved by the Council of the Society. The first or subsequent examination for any degree or diploma recognised by the General Medical Council, providing the examination has been approved by the Council of the Society. (2) The Higher School Certificate examination conducted by an examining body approved by the Board of Education for subjects taken as principal subjects. The fee on acceptance of these certificates is £2 2s., and subsequently the same regulations apply as to the Pharmaceutical Society's examinations.

### 2. Chemist and Druggist Qualifying

Having passed each subject in the Preliminary Scientific and completed 4,000 hours in an open shop, approved public institution, or approved wholesale chemist's laboratory, and the necessary collegiate training for the Final examination, and reached the age of twenty-one, the candidate should send a birth certificate, together with another fee of £12 12s., and the necessary declaration of having completed the conditions, on the prescribed form, to the Registrar. The examination is conducted on similar lines, and success in all subjects entitles the candidate to be registered as a chemist and druggist by examination on payment of the appropriate annual fee.

All candidates have the choice of being examined in the practical portion of the examination in London or Edinburgh, and they are required to state the venue desired when filling up the entrance form. The candidate's books showing the practical work in all subjects must be taken to the examination for inspection by the examiner should he so desire.

The syllabus set out below is that now in being, though suitable arrangements are made for examination under the old syllabus for those who are entitled to be so examined owing to their previous entry.



## Educational Information



### SYLLABUS

#### PHARMACOGNOSY

The cultivation, collection, preparation for the market, the commerce in and the storage of crude drugs as illustrated by the drugs named in the list below.

The macroscopical characters, the biological and geographical sources, the commercial varieties and adulterants, the constituents and the qualitative chemical tests for the following drugs:—

Acacia	Cinchona	Lobelia
Aconitum	Cinnamomum	Mel
Agar	Coca	Myristica
Aloe	Coccus	Myrrha
Arnica	Colchici Cormus	Nux Vomica
Anethum	Colchici Semen	Opium
Anthemis	Colocynthus	Podophyllum
Asafoetida	Colophonium	Podophyllum
Aurantii Cortex	Copaiba	Indicum
Balsamum Peru-	Coriandrum	Prunus Serotina
vianum	Creta	Quassia
Balsamum Tolu-	Digitalis Folium	Quillaia
tanum	Dryopteris	Rheum
Belladonnae Folium	Filix-mas	Savin
Belladonnae Radix	Ergota	Scilla
Benzoinum	Foeniculum	Senega
Buchu	Gelatinum	Sennae Folium
Calumba	Gentiana	Sennae Fructus
Cannabis	Glycyrrhiza	Serpentaria
Cantharis	Hamamelis	Stramonium
Capsicum	Hyoscyamus	Strophanthus
Cardamomum	Ipecacuanha	Styrax
Carum	Ipomoea	Tamarindus
Caryophyllum	Jalapa	Tragacantha
Cascara Sagrada	Krameria	Valeriana
Catechu	Limonis Cortex	Zingiber
Cera Flava	Linum	

The extraction of fixed and volatile oils as illustrated by the following:—Castor oil, clove oil, cod-liver oil, olive oil. The more important classes of constituents of crude drugs with reference to their behaviour when used in making pharmaceutical preparations and when dispensed. The microscopy of starch, calcium oxalate and epidermal trichomes and the micro-chemical tests for cellulose, lignin, the materials used for filtering and the fibres used for surgical dressings.

*Practical Examination.*—The candidate will be required to examine, dissect, identify and describe, in the entire or broken condition, the drugs mentioned in the above list, by means of their macroscopical characters, by qualitative chemical tests, and by the microscopy of calcium oxalate and epidermal trichomes. To examine fibres and fabrics used for surgical dressings, materials used for filtration, and starch.

#### PHYSIOLOGY

This subject follows on pharmacognosy, and the same remarks apply. The syllabus sets out:—

The structure of the blood, coagulation; the transport of oxygen and carbon dioxide. The properties of cardiac, striated and unstriated muscle. The mechanism of the heart and valves. The coronary circulation. The effect of inflow and rate on the output of the heart. The importance and maintenance of the blood pressure. The structure of the glands of internal secretion. The effects following their removal, and the properties of extracts prepared from them, including (a) the pituitary body, anterior and posterior lobes, (b) the thyroid and parathyroid, (c) the pancreas, (d) the suprarenals, (e) the testicles and ovaries. The physiology of the alimentary tract, including a knowledge of the control of salivary, gastric, pancreatic and biliary secretion, and of the movements of the alimentary tract. The chemistry of the common food substances, meat, eggs, milk and bread, and the properties of the digestive juices and bile.

#### PHARMACEUTICS

The history of pharmacy from A.D. 1600. The principles involved in pharmaceutical operations, including a consideration of the pharmaceutical application of the following:—

Vapour pressure, solution, ionisation, osmotic pressure, hydrolysis, viscosity, surface tension, distillation, sublimation, colloidal state.

The galenical preparations included in the British Pharmacopœia, their biological and chemical standards, changes liable to occur in these preparations, and the means of preventing them. Enzyme action. The biology of bacteria in so far as it bears on the preparation of sterile solutions, vaccines, and on the performance of sterility tests. The preparation of such serums, vaccines and hormones as occur in the British Pharmacopœia. The compounding and dispensing of medicines. Surgical dressings and their standards. The interpretation of prescriptions and the translation of Latin prescriptions into English. Posology.

*Practical Examination.*—The candidate must be prepared to conduct ordinary pharmaceutical operations, including the making of the galenical preparations in the British Pharmacopœia, the dispensing of prescriptions, the making of sterile preparations; the detection of unusual doses and the completion of his preparations in a proper manner.

#### PHARMACEUTICAL CHEMISTRY

The general principles of inorganic chemistry with particular reference to those elements and compounds in frequent use in pharmacy: their preparation, properties and purification for pharmaceutical use. The general principles of organic chemistry involving the main types of aliphatic substances and the simpler aromatic compounds containing the benzene nucleus, with special reference to those of pharmaceutical importance. Pharmaceutical standards of purity and chemical tests of conformity therewith. The principles involved in the practical work of this syllabus.

*Practical Examination.*—The candidate will be required to show practical familiarity with the following in reference to their application to substances in frequent use in pharmacy:

The preparation of simple organic compounds such as chloroform, ether, acetaldehyde, ethyl acetate, nitrobenzene and acetanilide. The identification by chemical tests of the salts of the simple organic acids; the identification or reference to class of simple organic compounds. The performance of the simple chemical tests used to limit the adulterations and contaminations which may occur in the inorganic substances, and in the simple organic compounds of pharmaceutical importance. The quantitative determination of quinine in iron and quinine citrate and of the alkaloid content of simple solutions of alkaloidal salts. Simple gravimetric analysis illustrated by the determination of moisture limits, sulphates, aluminium and iron. The volumetric determinations of simple chemical substances and of such when present in simple solutions. Alkalinity of glass. The use of the nitrometer illustrated by the estimation of organic nitrites.

#### FORENSIC PHARMACY

The candidate will be required to possess such information concerning the following enactments and the regulations made under them as is applicable to the practice of pharmacy in shop and hospital: The Pharmacy and Poisons Acts, 1852 to 1933, the National Health Insurance Act, 1924, the Dangerous Drugs Act, the Apothecaries Act, the Medicine Stamp Act, the Shops Acts (sections dealing with the sale of medicines), the Weights and Measures Acts, the Protection of Animals Act, the Sale of Food and Drugs Act, the Registration of Business Names Act, the Venereal Disease Act, the Therapeutic Substances Act, and the relevant sections of the Acts relating to the use of stills, the sale of spirits (including methylated spirit and medicated wines), the sale of abortifacients.

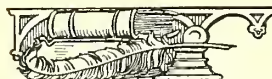
#### Summary of Examination Fees

Apart from the fee for collegiate courses, the following are payable by pharmacy students:—

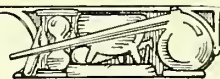
- Registration as student, £2 2s.
- Preliminary Scientific, £6 6s.
- Re-examination in case of failure, £4 4s.; a person who has failed to attend, £2 2s.
- Chemist and Druggist Qualifying examination, £12 12s.
- Re-examination in case of failure, £6 6s.; a person who has failed to attend, £3 3s.
- Pharmaceutical Chemist Qualifying examination, £12 12s.

#### Pharmaceutical Chemist Qualification

Those about to enter the calling should be informed as to the conditions for a chemist and druggist qualification and of the relative value of the pharmaceutical chemist qualification, and under competent advice, parents and guardians should weigh carefully the advantages and disadvantages of the method of procedure. Two ways are open to gain the latter, one through the examinations of the Pharmaceutical Society and the other



## Educational Information



through the University of London or any other recognised university. The training and examinations of London University include both internal and external students. The entrance and Preliminary Scientific examinations are the same as those of the chemist and druggist qualification or such as are accepted by the particular university, and after registration the question of apprenticeship before or after the Preliminary Scientific examination should be settled. The process of passing from the chemist and druggist to the pharmaceutical chemist is now fairly straightforward. The examinations for the pharmaceutical chemist qualification are held in January and July. The regulations require apprenticeship under similar conditions to those of the chemist and druggist. The course of training in college consists of two sessions (two academic years) of not less than twenty-five hours weekly of three terms in pharmaceutical chemistry, pharmacognosy, pharmaceuticals, forensic pharmacy and physiology.

The Pharmaceutical Chemist examination, by rearrangement of the syllabus, occupies eight days against nine under the old curriculum. Physiology has been introduced, theoretical and practical, but all those who had presented themselves for examination before June 1, 1937, need not take physiology. This concession lapses after March 1, 1940.

### SYLLABUS

#### PHARMACEUTICAL CHEMISTRY

The history of chemistry from A.D. 1750.

The principles of physical chemistry treated in an elementary manner with references to their pharmaceutical application, including the physico-chemical properties of gases, liquids and solids; equilibria and the law of mass action; catalysis; thermochemistry; the properties of dilute solutions; osmosis; molecular weight determination; colloidal state; adsorption and absorption; electrical conductivity; ionisation; hydrolysis; strength of acids and bases; indicators; the determination and significance of *pH* values; refractivity; optical rotation; surface tension and viscosity; boiling points and boiling ranges; distillation of liquid mixtures. The general principles of inorganic chemistry with particular reference to those elements and compounds in frequent use in pharmacy; their preparation, properties and purification for pharmaceutical use. The general principles of organic chemistry involving the main types of carbon compounds extended by a more detailed treatment of those compounds in frequent use in pharmacy and including the fixed oils and fats, waxes; soaps; glycosides; ureides and urethanes; heterocyclic compounds and the characters, methods of extraction, preparation and purity of the important alkaloids; purines; proteins; alicyclic compounds, terpenes and the more important constituents of essential oils and related products; medicinal dyes, organometallic compounds; the crystallisable hormones and vitamins; synthetic drugs. The principles of qualitative analysis of chemical substances and the chemical assay processes of crude drugs and pharmaceutical preparations. Pharmaceutical standards of purity and chemical tests of conformity therewith.

**Practical Examination.**—The candidate will be required to

show practical familiarity with the common methods of experiment, including the following and their application to substances in frequent use in pharmacy:—

The preparation of inorganic and organic compounds. The identification, or reference to class, of substances in the pure state or in admixture; the detection and identification of the impurities which they may contain. The determination of the physical constants used as criteria of purity. The quantitative analysis of inorganic and organic substances; the quantitative determination of the active constituents in drugs, pharmaceutical preparations, essential oils and other products that are amenable to chemical assay.

Chemistry from all parts of the old syllabus has been included; a comparison with previous layouts will show that the subject has been brought in closer touch with pharmacy and greater details given, but the margins are wide. The examination consists of two written sessions and two practical, and the usual custom to consult books in the practical remains, as well as bringing laboratory books.

#### PHARMACEUTICS

The history of pharmacy from A.D. 1600.

The syllabus and examination in pharmaceuticals harmonises with that of the Chemist and Druggist examination. The dispensing of medicines could be finished in the first year, which would ease the stress of the final examination. The syllabus on pharmaceuticals in the Chemist and Druggist course should be consulted, as only the following items are additional for the pharmaceutical chemist qualification. It is now practical to pass from the chemist and druggist qualification to that of Ph.C. if anyone is so desirous.

The principles involved and the apparatus used in pharmaceutical operations in general use by practising pharmacists and by manufacturers. The galenical preparations in frequent use in pharmacy, changes liable to occur in these preparations and the means of preventing them; enzyme action. The

biology of bacteria in so far as it bears on the preparation of sterile solutions and of vaccines, and on the performance of sterility tests. The preparation and standardisation of serums, vaccines, hormones and vitamins; the biological methods of standardisation of galenicals. The compounding and dispensing of medicines and the preparation of medicated surgical dressings. Surgical dressings and their standards. The interpretation of prescriptions and the translation of Latin prescriptions into English. Posology. The candidate will be required to have such a knowledge of French or German as will enable him, with the aid of technical dictionaries, to translate into English passages from either French or German pharmacopœias.

**Practical Examination.**—The candidate must be prepared to conduct ordinary pharmaceutical operations, including the making of galenical preparations, the dispensing of prescriptions, the detection of unusual doses, and the completion of his preparations in a proper manner; to prepare sterile solutions, to perform tests for sterility; to prepare bacterial vaccines, including the enumeration of organisms in a suspension.

### Syllabus (in brief) for Chemist and Druggist Examinations

#### 1. PRELIMINARY SCIENTIFIC

**BIOLOGY.**—1. *Botany*: Morphology, including anatomical structure; physiology, reproduction; physical effects of light and gravity, classification of plants. 2. *Zoology*: Cell and general characters; functions and kinds of tissues; life-history of amoeba; paramoecium; hydra; lumbricus; blatta. Parasitism; heredity; evolution.

**CHEMISTRY.**—Chemical principles; non-metals and their compounds; metals; formation of oxides and salts; knowledge of estimation of carbon; hydrogen, nitrogen; simple chemical problems.

**PRACTICAL CHEMISTRY.**—Analysis of salt containing not more than two metals and two acid radicals; identification and knowledge of specified metals and salts; principles of volumetric analysis.

**PHYSICS.**—Conservation of energy; gravitation; diffusion, vapour densities; thermometer, barometer; specific gravity; mass, force, energy, work; forms of matter; temperature and pressure; light; reflection and refraction; correction of vision; static and current electricity cells.

#### 2. QUALIFYING

**PHARMACOGNOSY.**—Pharmacopœial drugs and others specified; recognition, classification; sources, structure, chemical and physical characteristics; active principles.

**PHYSIOLOGY.**—Blood, coagulation; varieties of muscle; heart and its valves; glands and secretion; coronary circulation; blood pressure; alimentary tract.

**PHARMACEUTICS.**—Laboratory methods and appliances; preparation and production of galenicals; knowledge of assay; sterilisation; dispensing and prescription reading and translation.

**PHARMACEUTICAL CHEMISTRY.**—Preparation and properties of specified medicinal organic compounds; pharmacopœial tests for impurities, assay, and volumetric determinations.

**FORENSIC PHARMACY.**—Knowledge of schedules, conditions and precautions of sales of poisons, and laws affecting the keeping of open shop.



## Educational Information



### PHARMACOGNOSY

The syllabus for the written examination in this subject corresponds with that for the Chemist and Druggist Qualifying examination except that instead of "the microscopy of starch, calcium trichromes and the micro-chemical tests for cellulose, lignin," the following is substituted:—

The methods used for the microscopical examination of crude drugs, including the isolation and identification of tissues and cells. Micro-chemical tests for tissues and cell contents. Microscopical measurements. The valuation of crude drugs.

**Practical Examination.**—The candidate must be prepared:—To recognise, in the entire condition, crude drugs in frequent use in pharmacy. To examine, dissect, identify and describe, in the entire or broken condition, the drugs mentioned in the above list, by means of macroscopical qualities and tests. To prepare for microscopical examination any of thirty-one of the crude drugs mentioned in the list (see syllabus for Chemist and Druggist examination), to describe their powders and to detect adulteration in them. To examine fibres and fabrics used in surgical dressings, and materials used for filtration.

### PHYSIOLOGY

The first examination on this subject was in July 1936, and consisted of one written paper and one practical. The material set out below is in addition to that given under the Chemist and Druggist syllabus. It should be noted that some pharmacology is introduced here, and there is one session of practical work in the examination.

The enumeration of red cells in the blood.

The nervous control of the heart and the function of the carotid sinus.

The control of the blood supply to the organs of the body.

The mechanism of respiration and its control; action of vagus; the effect of (a) oxygen, (b) carbon dioxide, (c) nitrogen, and (d) carbon monoxide.

The physiology of the skin, loss of heat and sweating; the kidney including the chemistry of urine. Detection and estimation of principal, normal and abnormal constituents.

Nerve cells and fibres. The synapse. Spinal reflexes. Function of medullary centres. Effect of removing the cerebrum. Motor cortex and pyramidal tracts. Function of corpus striatum. General arrangement of fibres entering and leaving the spinal cord, including the sympathetic chain and the peripheral connexions of the vagus and sympathetic nerves.

The physiology of mammalian reproduction including the implantation of the fertilised ovum and the function of the placenta.

The action of the following drugs:—chloroform, ether, alcohol, bromides, hyoscyne, atropine, morphine, strychnine, caffeine, digitalis, nitrates, acetylsalicylic acid. The general mode of action of bitters, purgatives, emetics and expectorants, astringents, antacids.

**Practical Examination.**—The candidate must be prepared:—

To recognise and describe with diagrams, microscopic preparations of any tissues or organs mentioned in the foregoing syllabus. To show his acquaintance with the methods employed for the demonstration of fundamental physiological processes, as laid down in the foregoing syllabus, and to carry out such chemical manipulations or simple experiments as are comprised therein.

### FORENSIC PHARMACY

In this subject there is no variation from the requirements for the Chemist and Druggist examination.

### SUPPLEMENTARY QUALIFICATIONS

#### Diploma in Biochemical Analysis

A diploma is granted by the Pharmaceutical Society in this subject after a systematic course and subsequent examination. The fee for the examination is £5 5s.; the examination is held in London and Edinburgh in April of each year, the last day of entry being March 1. The period for an approved course of instruction extends over three months, or a part-time course over six months. Proof must be given of training. Usually the lectures, followed by practical work, are given in the evening.

The examination consists of a three-hours' written paper, two three-hours' practical tests, and a short oral. Original laboratory notebooks must be available for inspection. The syllabus gives the details of the chemical examination of urine, blood and cerebrospinal fluid; milk analysis, gastric analysis, analysis of faeces; principles of basal metabolism with metabolism experiments; renal efficiency tests; blood-sugar curves; acidosis and alkalosis; chemical tests of efficiency of liver and bile passages and pancreatic efficiency. Training takes place at 17 Bloomsbury Square (under Messrs. G. A. Harrison, M.D., and H. E. Archer, M.R.C.S., F.I.C., Ph.C.); and in Edinburgh, Glasgow and Manchester. Candidates must be members of the Pharmaceutical Society.

#### Diploma in Pharmaceutical Analysis

The D.P.A.Pharm.Soc. is awarded after a course of training in pharmaceutical analysis. Part I extends over one academic year in the case of a day course or two years in case of part-time or evening. Part II includes not less than two years in a pharmaceutical analytical laboratory. The places for training must be approved. The examination takes place in London in July and the fee is £5 5s. Candidates must be members of the Pharmaceutical Society who were registered as pharmaceutical chemists not later than the third year prior to the year of entry. The syllabus includes chemical analysis; physical methods applied to apparatus; examination of drugs and galenicals; disinfectants; infants' foods; water; urine; writing of reports; general knowledge of legal requirements governing the sale of drugs, medicines and poisons. There are special regulations which only apply to persons registered before February 1, 1933, giving concessions in suitable cases for the elimination of routine systematic training: application should be made to the Registrar, Pharmaceutical Society, 17 Bloomsbury Square, London, W.C.1.

#### University Examinations in Pharmacy

##### LONDON

In order to be admitted to a degree of B.Pharm., London, either as an internal or external student, candidates must (1) matriculate in one of the ways provided by the regulations, (2) pass the Intermediate examination in science, (3) have followed an approved course of study under recognised teachers of the University or in approved institutions. The fee for each examination is £6 6s. Application for copies of the regulations should be made to the Academic Registrar, the Senate House, University of London, W.C.1, or for an external student to the External Registrar.

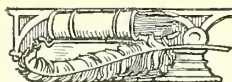
The Intermediate examination of the University for external and internal students is set in two papers and a "practical" in each subject. Chemistry includes methods which lead to the discovery of the composition of common natural materials; determination of molecular weights, chemical laws and processes. In the practical: Quantitative, gravimetric and volumetric work. Notebooks must be available for inspection by the examiners.

In Physics: The properties of solids, liquids and gases; principles of heat, sound and light, and the properties of magnetism and electricity.

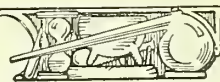
Botany: Characteristics of angiosperms, gymnosperms, and specified natural orders. Pteridophyta, bryophyta, algæ and fungi, together with elementary physiology. In the practical will be included dissection and examination of parts of plants.

Zoology: The fundamental facts and laws, including specified types. General organisation of types, biological laws, structural phenomena, reproduction and diagnostic characteristics of lower forms of life. In the practical: Parts of the animals selected will require description, and some dissection is expected.

The B.Pharm. degree Final examination is the same for external as for internal students, covering pharmaceuticals, pharmaceutical chemistry, pharmacognosy, and physiology, and is similar to the syllabus for the Pharmaceutical Chemist qualification, minus forensic pharmacy. The degree cannot be taken until three years after matriculation. The syllabus in the Ph.C. is drawn up by mutual agreement between University of London representatives and the Pharmaceutical Society.



## Educational Information



A degree granted by the University does not entitle to registration by the Pharmaceutical Society, but Regulation 29 provides that any registered apprentice or student who has served the period of practical training and produces to the registrar a notification of having passed the Final examination for the degree of bachelor of pharmacy of the University of London, or a corresponding degree of any other University approved by the Pharmaceutical Society's Council, shall be deemed to have passed the Pharmaceutical Chemist Qualifying examination in the subjects set out on the final certificate, and shall be entitled to enter the examination of the Society in forensic pharmacy and, on passing, be entitled to registration.

### MANCHESTER

In Manchester, for the B.Sc. degree in Pharmacy candidates must first have satisfied the requirements for entry upon a degree course and attained credit standard in mathematics and a pass in mechanics in the School Certificate examination or its equivalent. They should then attend courses in chemistry, physics, botany and zoology, and present themselves for the Intermediate examination in these subjects at the end of the first year. Candidates who have offered mathematics in place of zoology attend a short three-months' course in zoology in the second year. Candidates before proceeding to the Final examination must present certificates of having attended satisfactorily during the second and third years approved courses in chemistry, botany, pharmacognosy, pharmaceutics and pharmaceutical chemistry, physiology, and short courses in bacteriology and in methods of biological assay. They must also present satisfactory evidence that they can read scientific literature in German by passing a language test in this subject. They are required to pass the Final examination in the subjects of botany and pharmacognosy, chemistry and pharmaceutical chemistry, physiology, and pharmaceutics. This degree is accepted by the Pharmaceutical Society in lieu of the Ph.C. Qualifying examination except in the subject of forensic pharmacy. The cost of a degree course varies with the subjects chosen and with the nature of the degree, but the average fees for an ordinary B.Sc. degree course amount to £42 a session. Full particulars may be obtained from the Pharmaceutical Department, University of Manchester.

### WALES

The University of Wales confers the degree of Baccalaureus in Pharmacia (B.Pharm.), after the completion of a course of study divided into two parts.

The first part, extending over one year, is pursued at any one of the four constituent colleges of the University. In certain circumstances, it may be pursued at the Welsh College of Pharmacy.

The second part, extending over two years, is pursued at The Welsh National School of Medicine, in association with the Welsh College of Pharmacy. The Welsh College of Pharmacy is a full-time department of the Technical College, Cardiff. Principal: J. C. Jones, B.Sc.

Courses may also be provided which will enable students, otherwise qualified to do so, to enter for examinations for degrees and diplomas of other examining authorities. The next session commences in October. Further particulars may be obtained from The Secretary, The Welsh National School of Medicine, 10 The Parade, Cardiff.

### GLASGOW

In Glasgow, candidates must first pass the Preliminary examination. In not less than three academic years they must attend courses of instruction at the University or the Royal Technical College, and must have been "practically engaged in the operations of pharmacy." The regulations may be obtained from Jackson, Wylie & Co., 73 West George Street, Glasgow.

### BELFAST

The Queen's University confers the degree of B.Sc. in Pharmaceutics. Students desiring further information should apply to the Secretary of the University.

### Teaching Institutions

Schools and institutions recognised by the Pharmaceutical Society for the preparation of students for the Preliminary Scientific examination or for the Chemist and Druggist Qualifying and Pharmaceutical Chemist Qualifying examinations, or for all three, are to be found in the following centres:—

### ENGLAND AND WALES

#### LONDON

The College of the Pharmaceutical Society  
University of London

17 Bloomsbury Square, W.C.1.

Dean: H. Berry, B.Sc., A.I.C., Ph.C. The course for the Chemist and Druggist examination begins on October 4; fee for the course, £47 12s. 6d. The two years' course for the B.Pharm. and Pharmaceutical Chemist examination begins on October 4; fee, £47 12s. 6d. for each year. The above fees include subscriptions to the Students' Union and the University of London Union. Students will be given special instruction in methods of sterilisation and in the preparation and testing of biological products. They will have opportunity to see the work of the pharmacological laboratories. A course of instruction for the examination for the Diploma in Bio-Chemical Analysis will be given on two evenings weekly from October to April; fee, £10 10s. Inquiries should be addressed to the Dean.

#### Chelsea Polytechnic School of Pharmacy

Manresa Road, Chelsea, S.W.3

Principal: F. J. Harlow, M.B.E., Ph.D., B.Sc., A.R.C.S. The School of Pharmacy includes modern and well-equipped laboratories for the teaching of practical pharmacy, pharmacognosy, pharmaceutical chemistry, pharmaceutical research, pharmaceutical bacteriology, and large-scale galenic manufacture. Day courses for the Preliminary Scientific, Chemist and Druggist, Pharmaceutical Chemist, and Bachelor of Pharmacy examinations commence on September 25, the fee for a full-time day course being £8 per term or £21 per session. Matriculated students may attend B.Pharm. courses as internal or external students of the University of London. Students who wish to gain experience of hospital pharmacy are allowed to work in the dispensaries of L.C.C. hospitals. A short course of six lectures on surgical dressings will be held on Wednesday evenings at 8.30 p.m., commencing November 1. Prizes are presented annually to the most successful students in each course, and various scholarships are awarded. Full particulars from the Secretary, Chelsea Polytechnic, S.W.3.

#### Gordon Hall School of Pharmacy for Women

Drayton House, Gordon Street, W.C.1

Courses of training in pharmacy and dispensing. Particulars from the Principals.

#### London College of Pharmacy

361 Clapham Road, S.W.9

Principal: Irvine G. Rankin, B.Sc., Ph.C., D.B.A. Nine months' full-time courses for Preliminary Scientific and Chemist and Druggist Qualifying examinations. Evening classes for revision: Tuesday, Wednesday and Thursday. Courses of preparatory study by post can be taken by apprentices and juniors at any time before entering College. Large botanical and herb garden. Session commences October 4. Three months' separate revision courses, all subjects, every term. Special classes for students who are required to receive further instruction before re-entering the examinations.

#### Norwood Technical Institute

Knight's Hill, West Norwood, S.E.27

Principal: L. N. Coombs, B.Sc., A.I.C. Head of Science classes: J. Dimmick, B.Sc., A.I.C., A.M.I.W.T. Full-time day courses and day and evening part-time courses for Matriculation, Preliminary Scientific, Inter. B.Pharm. and Pre-Medical examinations. Also classes in organic chemistry suitable for pharmacy students. Session commences September 11. Fee: Full-time course, £5 per term (London students);



## Educational Information



out-County students should apply to the Principal. Part-time classes, from 7s. 6d.

### The South of England College of Pharmacy

186 Clapham Road, S.W.9

Principal: C. Beaven, Ph.C. The College is now devoting itself entirely to revision courses for the Preliminary Scientific and the Chemist and Druggist Qualifying examinations. Full-time revision courses commence in July, October, January and April. Fees, 10 guineas per term. Special courses for students required by examiners to undergo a further period of training. Correspondence courses, preparatory and revision.

### West Ham Municipal College

Principal: H. Baker, Ph.D., M.Sc. Day and evening courses for the Preliminary Scientific examination, commencing September 18. Fees: Day course, £9 9s. per session. Evening course, £1 per session.

### Westminster College of Pharmacy

190 Clapham Road, S.W.9

Principal: P. H. Woodnoth, Ph.C. The College has discontinued the day classes for the examinations of the Pharmaceutical Society and now specialises in the provision of preparatory courses of study by means of correspondence classes. These courses are provided for the Preliminary Scientific and Chemist and Druggist Qualifying examinations, and are used prior to attending approved courses of instruction. Full lecture course fee, covering a period of two years from date of commencement, £1 11s. 6d.; individual subjects may be taken at proportionate fees. Arrangements are also made, when required, to test the progress of the student by means of test papers at intervals. Revision students are catered for by the provision of a special series of test papers. A series of twelve papers is provided at a fee of £1 11s. 6d. Experienced tutors are retained for the correction of these papers.

### Wimbledon Technical College

Gladstone Road, S.W.19

Classes for Preliminary Scientific examination. Session commences September 25. Particulars from the Registrar.

### Woolwich Polytechnic

Woolwich, S.E.18

Principal: E. Mallett, D.Sc., A.M.Inst.C.E., M.I.E.E., F.Inst.P. Approved by the Pharmaceutical Society for the Preliminary Scientific examination. Particulars from the Secretary. Day course for Preliminary Scientific examination, £20. Part-time day and evening courses for B.Pharm., maximum fees, 30s.

## PROVINCES

### Aberystwyth University College of Wales

Principal: Ifor L. Evans, M.A. (Cantab.). Courses in chemistry and botany adapted to the requirements of candidates for examinations of the Pharmaceutical Society. Prospectus from the Registrar.

### Barnsley Technical College

Principal: D. Paton Grubb, B.Sc. (Edin.), M.Eng. (Sheff.), A.R.S.M. Recognised for the Preliminary Scientific examination. Part-time course, one whole-day per week, £3 3s. Additional evening or day instruction in chemistry, physics or biology.

### Barrow-in-Furness Technical College

Evening classes in chemistry, September to April. Fees: 7s. 6d. to 15s. Day and evening courses for apprentices, September to July. Fees: Course, including chemistry, physics and botany, £3 3s. Particulars from the Principal.

### Birmingham Central Technical College

Principal: D. S. Anderson, Ph.D., B.Sc., M.I.Mech.E., M.I.A.E. Head of Pharmacy and Biology Department: E. R. Withell, B.Sc., B.Pharm., Ph.C. Lecturers:—Pharmacy: T. L. Bowyer, F.I.C.; F. H. Oliver, B.Pharm., Ph.C.; J. Priestman, B.Sc., Ph.D.; J. C. Ladd, B.Sc.; Biology: E. J. Moore, M.C., M.Sc.; C. A. Cosway, B.Sc.; Mrs. M. Moore, B.Sc.; N. E.

Hickin, B.Sc. Full-time courses for the Preliminary Scientific, Chemist and Druggist Qualifying and Pharmaceutical Chemist Qualifying examinations of the Pharmaceutical Society, and for the Intermediate Pharmacy and Final B.Pharm. examinations of the University of London. Part-time course for Intermediate examination. Medals and prizes awarded in all the subjects of each course. Courses commence on September 25. Full particulars on application to the Principal, Technical College, Suffolk Street, Birmingham, 1.

### Birmingham (Handsworth) Technical College

Principal: A. Robson, B.Sc., B.Com., M.I.Mech.E. Special courses for apprentices, also for professional preliminary examinations. Fees, day or evening: 8s. 6d. to 13s. 6d. for courses in chemistry, physics and botany.

### Bolton Municipal Technical College

Principal: J. W. Simpkin, M.Sc. Courses in pure and applied chemistry, physics and biology. Evening courses, 5s.-15s. per session. Part-time day and evening courses, £1 1s. per session.

### Bournemouth Municipal College

Principal: C. E. Walker, M.A., B.Sc. Recognised for Preliminary Scientific examination. Day classes, fee £6 6s. per term; reduced fees for part time. Evening classes.

### Bradford Technical College

Principal: H. Richardson, M.Sc. Head of Department of Pharmacy and Lecturer in Pharmaceutical Chemistry: F. N. Appleyard, B.Sc. (London), Ph.C., F.I.C. Lecturers: Pharmaceutical chemistry, H. K. Dean, Ph.D., A.I.C. Pharmacognosy, D. W. Shaw, B.Sc. (Birmingham), Ph.C. Pharmacy, R. C. Kaye, B.Pharm. (London), Ph.C., and J. W. Cooper, Ph.C. Physiology, J. Douglas, M.D., D.P.H. Bacteriology, M. A. C. Buckell, M.B., B.S., D.P.H. Bio-Chemistry, J. M. Naftalin, M.B., Ch.B., D.P.H. Courses for the Preliminary Scientific, Chemist and Druggist and Pharmaceutical Chemist Qualifying examinations and for the degree of Bachelor of Pharmacy (University of London) begin on September 26. Post-graduate evening courses in Bio-Chemical Analysis and in Microscopy of Foods and Drugs commence during the second week in October. The College also provides recognised full-time (day) and part-time (evening) courses in Applied Optics.

### Brighton Technical College

Head of the School of Pharmacy: H. B. Mackie, Ph.C., B.Pharm. Full-time course for the Preliminary Scientific, the Chemist and Druggist Qualifying, the Pharmaceutical Chemist Qualifying and B.Pharm. examinations. Fee for any full-time, £24 the session, or £9 per term. Separate laboratories for dispensing, pharmaceutical chemistry, galenical pharmacy and pharmacognosy. Applications for admission should be made as early as possible to the Principal.

### Bristol Merchant Venturers' Technical College

Principal: Andrew Robertson, D.Sc.; Vice-Principal, F. W. Partington, B.Sc., A.M.I.Mech.E. Head of Pharmacy Department: D. J. Williams, B.Sc., Ph.C., Barrister-at-Law. Lecturers: General and Forensic Pharmacy, Head of Department, Pharmacy, W. Cooper, Ph.C. Pharmaceutical Chemistry, G. H. Moore, Ph.C., A.I.C. Botany, Miss E. E. M. Beer, B.Sc. Chemistry and Physics, H. J. Willavoys, M.Sc., A.I.C. Zoology and Physiology, H. Gorvett, Ph.D. Courses for the Preliminary Scientific and Chemist and Druggist Qualifying examinations. Fees (including deposit, etc.), £13 10s. 6d. and £27 10s. 6d. respectively.

### Cardiff Technical College

Principal: J. C. Jones, B.Sc., A.M.Inst.C.E. Head of Welsh College of Pharmacy: Rees Vernon Lloyd, B.Pharm. (Lond.), Ph.C. Day courses for Preliminary Scientific and Chemist and Druggist Qualifying examinations, commencing in October. Two years' course for Pharmaceutical Chemist Qualifying examination, and three years' course for B.Pharm. (Wales) degree. Fee for each course (October to July), £20. Part-time course for Diploma in Biochemical Analysis (held at Welsh National School of Medicine): fee, £10 10s. Open scholarships (tenable for three years) are offered by the College Committee.



## Educational Information


**Derby Technical College**

Principal: W. A. Richardson, O.B.E., B.A., D.Sc., B.Sc. (Eng.). Day and evening classes. Fees: Full-time course, £3 3s. per term; part-time day courses (one day per week and evening), £1 1s. per session inclusive. Recognised for Preliminary Scientific examination.

**Exeter University College**

Day classes for the Preliminary Scientific examination. Fees are printed in the general prospectus.

**Halifax Municipal Technical College**

Principal: B. R. Heasman, M.Sc. (Lond.), A.I.C. Instruction for Preliminary Scientific examination. Fee for full-time day course under the new regulations, £9 9s.

**Huddersfield Technical College**

Principal: J. W. Whitaker, B.Sc., Ph.D., F.I.C. Full- and part-time courses for Preliminary Scientific examination and for Inter. B.Pharm. examination. Fee: full time, £12 12s. a session; part time, £3 3s.

**Hull Municipal Technical College**

Head of Chemistry Department: L. Balmforth, B.Sc., F.I.C. Recognised for the Preliminary Scientific examination. Classes in inorganic, organic and physical chemistry, physics, biology, botany and materia medica. Courses in materia medica and dispensing for students who have already passed the Preliminary Scientific examination and wish to continue their studies before taking their final at the selected college.

**Kingston-upon-Thames Technical College**

Head of Pharmacy Department: H. P. Starck, M.A. (Cantab.), Hon. Natural Science Tripos, C.T.D. Full-time day, part-time day, and evening classes for the Preliminary Scientific, Inter. B.Pharm. and Society of Apothecaries examinations. Fee for day session, £15; or £5 per term for part-time day session; for evening session, £1 10s. Day students may take additional evening lectures without further fee. Pharmaceutical chemistry is taken on Wednesday afternoons and biology or physics (heat and light) on Thursday afternoons at an additional £1 per session per half-day for evening students. Session commences on September 25.

**Lancaster, Storey Institute Technical College**

Principal: Clifford Chew, M.Sc., F.I.C. Pure and Applied Chemistry Departments. Day and evening courses.

**Leeds College of Technology**

Principal: J. H. Everett, B.Sc. Day course for the Preliminary Scientific and other examinations. Fee: £18 18s. per session. Part-time day courses from £3 3s. per session. Evening courses from 10s. to 42s. per session, in chemistry (National Certificate), oils and fats, leather, dyeing, gas, chemical engineering, and courses for A.I.C. and London, B.Sc.

**Leeds University**

Courses of study for the Chemist and Druggist Qualifying and the Pharmaceutical Chemist examinations commence on October 3. Fee: £32 10s. per session. Candidates for the Preliminary Scientific examination are admitted to the Science Degree courses in the required subjects.

**Leicester College of Technology**

Principal: L. W. Kershaw, B.Sc., A.M.Inst.C.E., Head of the Department of Pharmacy: A. R. G. Chamings, B.Pharm., Ph.C. The School of Pharmacy occupies a new suite of laboratories. The Chemist and Druggist course includes window display (for which a modern shop window has been provided). Sterilisation and bacteriological courses continue to be conducted in the dispensaries and pathological laboratories respectively of the Leicester Royal Infirmary. The next session begins on September 18.

**Leicester, The Wyggeston Grammar School**

Headmaster: T. Kingdom, M.A. Recognised for Preliminary Scientific examination; three-term session from September to July. Fee, £18 18s. for the session.

**Liverpool, City Technical College**

Principal: R. R. Butler, M.Sc., F.I.C., F.C.S. Courses for the Preliminary Scientific examination. Full-time courses: Fees, £12 12s. per session; £5 per College term. Special fees for single subjects. Full particulars from the Principal.

**Liverpool School of Pharmacy**

Principal: H. Humphreys Jones, J.P., F.I.C., F.C.S., Ph.C. Preparation for the Preliminary Scientific and Chemist and Druggist Qualifying examinations. Revision course for the October examinations commenced August 8. Nine months' course for the Preliminary Scientific examination and nine months' course for the Qualifying examination commencing first week in October.

**Manchester University**

Senior Lecturer in Pharmacy: H. Brindle, B.Sc., F.I.C., Ph.C. Courses for the Chemist and Druggist and Pharmaceutical Chemist Qualifying examinations. Three years' course for the B.Sc. Degree in Pharmacy. A part-time course is held on Wednesdays for the Pharmaceutical Society's Diploma in Biochemical Analysis. Particulars from the Registrar or the Senior Lecturer in Pharmacy.

**Norwich Technical College**

Principal: H. W. Howes, M.A., M.Sc., Ph.D. Full-time day course recognised for Preliminary Scientific examination. Fee, 9 guineas. Session opens September 11. Fees, 10s. to £9 9s. per session. Part-time course, day and/or evening for apprentices; fees, from 5s. 6d.

**Nottingham University College**

Head of School of Pharmacy: A. O. Bentley, Ph.C. Full-time day course for Chemist and Druggist examination; fee, £32. Two-year course for B.Pharm. and Ph.C. examinations; fees, £32 each session. Five days per week course for one year for Preliminary Scientific examination; fee, £27. Course for Pharmaceutical Society's Diploma in Biochemistry (four half-days per week); fee, £12 12s. for two terms.

**Preston, Harris Institute**

Affiliated to the Universities of Manchester and Liverpool. Full-time day course for the Preliminary Scientific examination. Session begins in September. Fees: £10 10s. per session for the three subjects or £3 10s. per term. Full-time day course for Inter. B.Sc. in science or engineering. Evening courses in chemistry, physics, biology and mathematics for Inter. and Final B.Sc., etc.

**Plymouth and Devonport Technical College**

Principal: A. R. Boeree, M.A., B.Sc. (Oxon.), F.I.C. Part-time courses for Preliminary Scientific examination held three afternoons or evenings each week. Fee, £4 per session. Full-day courses for registered students. Fees, £18 15s. to £25.

**Portsmouth Municipal College**

Principal: Leonard B. Benny, M.A. (Cantab.), B.A. (Lond.). Approved under the regulations of the University of London and Pharmaceutical Society. Classes commence on September 18. Fees: Full-time courses, £15 15s. for Portsmouth residents and those in administrative County of Southampton; £21 for others.

**Salford Royal Technical College**

Principal: John A. Hartley. Recognised for Preliminary Scientific examination. Full-time day courses; fee, £10 10s. per session.

**Southampton University College**

Courses are available in preparation for the Preliminary Scientific examination. Fee, £15 per session. Residential facilities are also available. Details of courses, etc., from the Technical Officer.

**Stockport College for Further Education**

Full-time day course for the Preliminary Scientific examination and part-time day revision courses. Principal: G. Wood, M.Sc.



## Educational Information



### Sunderland Technical College

Principal: F. H. Reid, B.Sc., M.I.Mech.E. Head of Pharmacy Department: Miss H. C. M. Winch, Ph.C., A.I.C. Full-time day courses recognised for Preliminary Scientific, Chemist and Druggist and Pharmaceutical Chemist Qualifying examinations and for the Pharmaceutical Society's Diploma in Biochemistry. Recognised by the University of London for B.Pharm. Fee: £20 per session for full-time course.

### Swansea Municipal Technical College

Nine months' full-time course for the Preliminary Scientific examination. Fee for full-time course, £15 15s.

### Wigan and District Mining and Technical College

Principal: J. F. S. Ross, M.C., B.Sc., Ph.D. One-year course for the Preliminary Scientific examination. Fee: £10 10s. per session.

### Wolverhampton and Staffordshire Technical College

Principal: W. E. Fisher, D.Sc. Chemistry, W. Regan, B.Sc. (Head of Department); R. S. Morrell, M.A., Sc.D. (Honorary Research Tutor); M. Schofield, M.A., B.Sc.; L. R. Mernagh, B.Sc.; Materia Medica and Pharmacy, F. W. Hurdman, M.P.S.; Botany and Zoology, E. S. Twyman, B.Sc. Physics, R. G. Sayer, B.Sc., M. Schofield, M.A., B.Sc. Fees, £12 12s. per session or £5 5s. per term. 1939-40 session opens September 25.

## SCOTLAND

### Aberdeen, Robert Gordon's Technical Colleges

Pharmacy: James E. Bowen, B.Sc., Ph.C., A.I.C.; Herbert Broadley, Ph.C.; E. Thorpe, B.Pharm., B.Sc., Ph.C.; D. O. Pinkerton, B.Sc. Pharmaceutics; E. C. Barnett, B.Sc. Chemistry; W. Maitland, D.Sc. Physics; J. D. Stewart, M.A. Day courses: Preliminary Scientific, Chemist and Druggist Qualifying, and Pharmaceutical Chemist Qualifying examinations, and Intermediate and Final examinations for the Degree of Bachelor of Pharmacy of the University of London. Fees: Each course, £26. Evening course over three years: fees, 1st stage, £1; 2nd stage, £1 10s.; 3rd stage, £1 10s.

### Dundee Technical College

Head of Pharmacy Department: D. McCall, B.Sc., Ph.D., Ph.C., F.I.S. Students prepared for all examinations of the Pharmaceutical Society and for B.Pharm. of London University. Classes begin September 18. Preparatory evening classes in botany and chemistry, on September 11. Fees: Day classes, £26 5s.; evening classes, £1 to £1 10s. per session.

### Edinburgh, Heriot-Watt College (incorporating The Royal Public Dispensary School of Pharmacy)

Full-time courses for the Preliminary Scientific, Chemist and Druggist Qualifying and Pharmaceutical Chemist Qualifying examinations begin on October 10. The College is also recognised for the purposes of the B.Pharm. of the London University.

### Glasgow Royal Technical College

Superintendent, School of Pharmacy, James P. Todd, Ph.D., Ph.C. Full-time courses for the Preliminary Scientific, Chemist and Druggist and Pharmaceutical Chemist examinations. Students who have passed the entrance examination of the Scottish Universities or its equivalent can take a full-time course leading to the B.Sc. in pharmacy. Evening classes are held for the Diploma in Biochemical Analysis. The session begins on September 19. Degree course, 90 guineas; other full-time day courses, 25 guineas per annum.

### Paisley Technical College

Principal: Lewis F. Richardson, D.Sc. (Lond.), F.R.S. Recognised for Preliminary Scientific examination. Day and perhaps evening classes in the requisite subjects.

## Dispenserships

Official positions as dispensers or "pharmacists" are open to pharmacists as follows:—

LONDON COUNTY COUNCIL (EXCLUDING MENTAL HOSPITALS).—

For full-time officers the annual scales of salary are as follows:—

—(a) Pharmacist Class A, £400-£20-£500; Pharmacist Class B, £325-£12 10s.-£375; Pharmacist Class C, £250-£10-£300.

(b) Pharmacist acting as assistant to another pharmacist, £225-£10-£275. The normal hours of duty are forty-one and a half weekly. Full pay for a reasonable period is made at the discretion of the Hospitals and Medical Services Committee or a subcommittee thereof during absence from duty owing to illness. Annual leave: Pharmacists, Classes A, B and C, three weeks, rising to four weeks after twelve years' service, in addition to the six bank holidays or days in lieu thereof; others, two weeks, rising to three weeks after five years' service, in addition to the six bank holidays or days in lieu thereof.

LONDON COUNTY COUNCIL (MENTAL INSTITUTIONS).—The rates of pay for pharmacists in mental institutions controlled by the London County Council are as follows:—Large London County mental hospitals (men and women).—£270 a year, rising by £15 annually to £405. Caterham, Leavesden, St. Ebba's, and Tooting Bec hospitals and Darenth Park (men and women).—£250 a year, rising by £12 10s. annually to £350. The Manor, Epsom, and The Maudsley hospital (women).—£225 a year, rising by £10 annually to £275 thence by £12 10s. annually to £300. Part-time pharmacists and assistant pharmacists (part-time), £130 a year; if allocated for duty at two institutions—equivalent to whole-time employment—£225 a year, rising by £10 annually to £275.

NAVY.—The Pharmaceutical Service consists of the following grades:—(a) Head pharmacist; (b) superintending pharmacists; (c) senior pharmacists; (d) pharmacists. The age of pharmacists on entry must not be less than twenty-one nor more than twenty-eight years. Candidates must possess certificates showing that they have passed either of the qualifying examinations of the Pharmaceutical Society of Great Britain or hold the certificate of competency granted by the Pharmaceutical Society of Northern Ireland or that granted by the Pharmaceutical Society of Ireland, and produce testimonials and a full record of training, qualifications and experience. Successful candidates are required to satisfy the Civil Service Commissioners as to their health and character and to pay a fee of £3 before the issue of the certificate of qualification for appointment. They are included in the list of salaried officers and will be entitled to pension. Pharmacists are paid a salary of £190 per annum, on entry, rising by £12 annually to £274. They are also provided with quarters suitable for unmarried men. When such quarters cannot be provided, an allowance will be granted in lieu. When they are resident within the precincts of a naval hospital they will be allowed to buy certain articles of provision and fuel at contract rates. Pharmacists are eligible, subject to the existence of vacancies, and to their being recommended, for promotion to the grades of senior, superintending and head pharmacist. The scale of salary for senior pharmacists is £290-£12-£380, together with quarters or an allowance in lieu. Further particulars are given in the official regulations.

PUBLIC ASSISTANCE INSTITUTIONS.—Appointments of dispensers under the old poor-law service are now made by boroughs or county councils (see above for particulars of appointments made by the London County Council). Under the Poor Law Order of 1930 such dispensers are not included in the list of principal officers. The salaries vary.

PRISON COMMISSION.—Candidates for appointment must be between twenty-four and thirty-five years of age, and must hold the qualification of the Pharmaceutical Society of Great Britain as chemist and druggist or pharmaceutical chemist. The scale of pay begins at £200 per annum with quarters or an allowance in lieu, proceeding by annual increments to £325 per annum. For further information apply to the Secretary (Staff Branch), Prison Commission, 62-64 Baker Street, London, W.1.

SHIPPING SERVICE.—The descriptive article in THE CHEMIST AND DRUGGIST Annual Special Issue of June 27, 1936 (p. 736), should be consulted.

## Educational Information

### 2. IRELAND (EIRE)

THE chief enactments governing the practice of pharmacy in the Irish Free State are the Pharmacy Act (Ireland), 1875, the Pharmacy Act (Ireland), 1875, Amendment Act, 1890, and the Sale of Poisons (Ireland) Act, 1870. Particulars of these Acts, so far as the sale of poisons is concerned, and of the Dangerous Drugs Act, 1920, are given in each annual issue of *The Chemist and Druggist Diary*. The Act of 1875 set up a class of qualified persons, pharmaceutical chemists, to keep open shop for retailing, dispensing and compounding poisons and medical prescriptions. The Amending Act of 1890 brought into existence chemists and druggists and registered druggists on a statutory basis, and introduced a qualification for assistants to pharmaceutical chemists enabling them to transact the business of a shop during their employers' temporary absence. The Saorstát Éireann Juries Act, 1927, conferred on registered pharmaceutical chemists actually in business exemption from service on juries. The Irish Pharmacy Acts, 1875 and 1890, differ from the corresponding Acts of Great Britain in that mention is made of the subjects in which candidates for the Licentiate and the Registered Druggist qualification are to be examined—with the addition, in the earlier Act, of "such other subjects as may from time to time be prescribed by any regulations made in pursuance of this Act." The Registrar and Clerk to the Council of the Pharmaceutical Society of Ireland is Mr. James J. Kerr, P.C., M.P.S.I., 67 Lower Mount Street, Dublin.

#### Preliminary Examination

This examination must be passed prior to the service in pharmacy required by the Regulations for the Licence examination, unless such service has been commenced before January 1, 1907. The Preliminary examination has been suspended for a period of ten years from January 1, 1935. The Matriculation examination of the National University of Ireland will be accepted in lieu of the Preliminary examination provided that:—(1) A registration fee of £4 4s. is paid; (2) the certificate shows that the candidate has passed in Irish, English, Latin and mathematics; (3) such certificate shall be registered with the Society within sixty days of the commencement of the apprenticeship.

#### Pharmaceutical Licence

The qualifying examination for pharmaceutical chemist in Ireland is that of Licentiate. The conditions to be fulfilled before entering upon the Pharmaceutical licence examinations are:—

(a) After preliminary registration the person must serve four years as an apprentice or assistant with, and in the sole employment of, a pharmaceutical chemist, or an apothecary, or a firm of legally qualified pharmaceutical chemists, or apothecaries *keeping open shop*, and the candidate must spend the business day with his employer. (Provision is made for service with more than one employer, and, for those who have served four years with a chemist and druggist or registered druggist in Eire, two years' further service with a pharmaceutical chemist or an apothecary suffices.)

(b) Attend courses of lectures in theoretical chemistry and in botany and materia medica, and a course of practical chemistry (after the lectures in theory) at one or other of the following approved institutions:—

School of the Pharmaceutical Society of Ireland.  
Central Technical Institute, Waterford.  
Municipal Technical School, Drogheda.  
Municipal Technical Institute, Limerick.  
City of Dublin Technical Schools.  
Queen's University, Belfast.  
University College, Galway.

Royal College of Surgeons in Ireland, Dublin.  
School of Physic, Trinity College, Dublin.  
Crawford Municipal Technical Institute, Cork.  
Central Technical Institute, Clonmel.  
Municipal Technical Schools, Dundalk.  
City of Galway Technical Institute.  
Crawford Municipal School, Cork.  
University College, Dublin.  
Trinity College, Dublin.

Some of these are approved for all the subjects, others for one or two subjects only.

Candidates entering for the Licence examination for the first time after October 1, 1933, must have attended a course of practical pharmacy of three months' duration in the Society's Schools.

(c) The person must be twenty-one years of age.

(d) Declaration and certificates of the foregoing must be lodged with the Registrar when the candidate applies for entry to the Licence examination.

The examination commences on the Monday following the second Tuesday of January, April, July and October, at 10 a.m., and is held in the Pharmaceutical Society's House, Dublin.

Candidates must give notice of intention to attend, to the Registrar, fourteen clear days before the date of examination, and this must be accompanied by a receipt of having paid the fee (£5 5s.) into the Bank of Ireland to the credit of the Society. The necessary forms should be procured well in advance. The re-examination fee is £5 5s. The examination, which is written, practical and oral, is in the following subjects:—

**BOTANY:** Recognition of the principal indigenous plants used in medicine, their natural orders, and the characters of their several parts.

**MATERIA MEDICA:** Recognition of B.P. drugs; their characters, active principles, sources, official preparations and adulterations.

**CHEMISTRY:** Elementary laws of chemistry and physics, including equations. Recognition of B.P. chemicals, description of the processes by which they are obtained, qualitative analysis (including B.P. tests) and volumetric analysis, and a practical examination in these subjects. (The Council recommends "Text Book of Pharmaceutical Chemistry" (Bentley and Driver).)

**PRACTICAL PHARMACY:** Translation of Latin prescriptions, detection of dangerous doses, and compounding and dispensing. Processes of making and recognition of

B.P. non-chemical preparations, and an intimate knowledge of the Sale of Poisons (Ireland) Act, 1870; Arsenic Act, 1851; Poisons and Pharmacy Act, 1908; and D.D.A. Regulations.

Candidates passing the examination must pay a fee of £10 ros. for registration.

#### Assistants to Pharmaceutical Chemists

This examination, instituted as a qualification for assistants left temporarily in charge of the business of a pharmaceutical chemist, is held quarterly on the Monday following the examination for the Pharmaceutical Licence. This permits unsuccessful candidates at the latter examination to enter for the assistants' examination on payment of a fee of £2 2s. New candidates pay, in addition, a registration fee of £1 rs. The re-examination fee is £2 2s. The conditions are similar to those of the Licence examination, but the candidate need not be twenty-one years of age, nor have taken a special course of instruction. The subjects are:—

**PRESCRIPTIONS:** Candidates will be required to read autograph prescriptions, translate them into English, render a correct translation of the directions for use, and detect unusual doses.

**PRACTICAL DISPENSING:** To weigh, measure and compound medicines, write the directions in suitable language, finish and properly direct each package.

**MATERIA MEDICA AND QUALITY OF SPECIMENS:** To recognise the Pharmacopœia chemicals in frequent demand, and specimens of roots, barks, leaves, fruits, resins and gums in ordinary use; also to esti-

### EIRE

#### Pharmaceutical Qualifications in brief

##### LICENTIATE (L.P.S.I.)

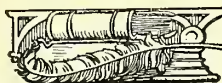
1. Recognised Preliminary examination to be passed before apprenticeship.
2. Four years' apprenticeship to be served in a pharmacy.
3. Courses of three months in (a) Theoretical Chemistry, (b) Botany and Materia Medica, (c) Practical Chemistry to be taken in an approved institution.
4. Pharmaceutical Licence examination to be passed after the age of twenty-one.

##### REGISTERED DRUGGIST (R.D.)

1. Four years to be served as assistant or apprentice.
2. Registered Druggist examination to be passed.

##### PHARMACEUTICAL ASSISTANT

As for L.P.S.I., but applicant need not be twenty-one, nor have taken courses of instruction.



## Educational Information



mate the quality of each specimen submitted, and its freedom from adulteration.

**PHARMACY:** To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, such as extracts, tinctures and powders, and give the proportions of the more active ingredients.

The candidates will also be examined in the Sale of Poisons (Ireland) Act; Arsenic Act, 1851; Poisons and Pharmacy Act, 1908; and D.D.A. regulations.

### Registered Druggists

The subjects of the examination are prescribed by the Pharmacy Act (Ireland) Amendment Act, 1890, and are as follows: English orthography and composition.

Arithmetic and the weights and measures of the British Pharmacopœia.

The appearance and properties of the various drugs and chemicals in general use.

The Sale of Poisons (Ireland) Act.

The examination is open to anyone who has served as an assistant or apprentice for not less than four years to a pharmaceutical chemist, chemist and druggist, registered druggist, or licentiate apothecary, keeping open shop, and is held in Dublin on the second Tuesday of January, April, July and October. Application for admission, accompanied by the necessary declarations of service and a receipt for £4 4s. placed to the credit of the Society in the Bank of Ireland, must be made to the Registrar at least fourteen days before the dates of the examinations. The re-examination fee is £2 2s.

### 3. NORTHERN IRELAND Preliminary Examination

**PHARMACY** in Northern Ireland differs from pharmacy in Great Britain and in the Irish Free State in that the registered proprietors of retail businesses will all, eventually, be pharmaceutical chemists, the former class of registered druggists having either become pharmaceutical chemists since 1925 or having been registered under a provision which is not being continued permanently. The Pharmacy and Poisons Act (Northern Ireland), 1925, under which this change is taking place, provided a modified examination for registered druggists who wished to qualify as pharmaceutical chemists; and many have thus secured the higher qualification. The Queen's University of Belfast offers the degree of B.Sc. in Pharmaceutics, the examination for which exempts from examination by the Pharmaceutical Society in pharmacognosy and chemistry, Part II, and from the written examination in pharmacy. Full particulars may be obtained from the Registrar of the University or the Secretary of the Society.

Before a student can become apprenticed he must pass a preliminary examination in English, mathematics, and three other subjects (one of which must be a language from the following list):—Latin, Greek, French, German, Spanish, Italian, Irish, modern history, geography, botany, chemistry, physics or mechanics. The five subjects must have been passed at one, or not more than two, of the following examinations:—(a) The Matriculation examination of the Queen's University of Belfast; (b) any examination accepted by that University as equivalent to Matriculation examination; (c) the Pharmaceutical Preliminary examination of Queen's University, Belfast. Candidates in the first instance must apply to the secretary of the Pharmaceutical Society of Northern Ireland, 73 University Street, Belfast, at least one month before the last day of entry for Matriculation. They will be examined on the papers set for the Queen's University Matriculation examination, and must reach the standard set for the pharmaceutical

Preliminary, which is below Matriculation standard. An application for the Preliminary certificate of apprentice to a pharmaceutical chemist must be accompanied by £3 3s. Having obtained this, the student will register officially as an apprentice at the Ministry of Home Affairs (fee 5s.). A four-years' apprenticeship to a pharmaceutical chemist or four years with a registered druggist and two years with a pharmaceutical chemist then begins.

### Pharmaceutical Chemists

Having satisfied the requirements as to apprenticeship and attendance at approved courses of instruction the candidate, under the new Regulations, must pass Part I, the subjects of which are botany, chemistry Part I, physics and business methods (or pass the Intermediate examination of the Queen's University, Belfast):—

**BOTANY.**—The elements of plant morphology and anatomy, physiology, classification. Practical examination of plants and preparation of sections for the microscope.

**CHEMISTRY, PART I.**—An elementary knowledge of chemical action, laws, valency; non-metals, metals, carbon, methane, ethylene and acetylene; methods of determining carbon, hydrogen, oxygen and nitrogen in organic compounds. Solve simple problems in weight and volume. *Practical.*—Preparation of inorganic substances; qualitative and quantitative (volumetric) analysis.

**PHYSICS.**—Elementary knowledge of mass, energy and work, solids, liquids, gases; temperature; propagation of light, magnetism and electricity. *Practical.*—Perform simple experiments on the above.

**BUSINESS METHODS.**—Book-keeping, including business books required in a pharmacy; double entry; balance sheets; commercial law relating to master and servant, leases, agreements and contracts. A working knowledge of matters likely to arise in pharmaceutical practice relating to licences, insurance, income tax, partnership and company trading, elementary principles of advertising and salesmanship; modern methods of window display; shopcraft, including arrangement of a shop, windows, heat, ventilation, counters, wall and counter cases and general layout.

Having passed Part I at not more than two examinations, the candidate supplies evidence of age, twenty-one, courses in the subjects of Part II as follows. Alternatively, the candidate may submit to the Board of Examiners evidence that he has passed the examination in all subjects of Final Part I for the B.Sc. in Pharmaceutics of the Queen's University, Belfast, and present himself for oral and practical examinations in pharmacy, practical pharmacy, Latin and prescription-reading. A candidate who fails in any of these subjects must present himself in all at another examination.

**PHARMACOGNOSY.**—Recognition of B.P. or B.P.C. drugs, their sources, characters, active principles, varieties, natural orders, knowledge of B.P. tests.

**PHARMACY.**—Knowledge of operations requiring heat, disintegration of solid substances, filtration, expression, solution, art of dispensing, manufacture of galenicals.

**LATIN AND PRESCRIPTION-READING.**—Translation of Latin prescriptions; detection of errors; knowledge of posology; percentages.

**PRACTICAL PHARMACY.**—Perform operations of the B.P. in making galenicals. Compound and dispense medicines.

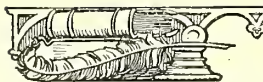
**FORENSIC PHARMACY.**—Knowledge of poisons in the fourth Schedule to the Pharmacy and Poisons Act (Northern Ireland), 1925, and conditions relating to keeping, selling and dispensing. Dangerous Drugs Acts and Regulations.

### NORTHERN IRELAND

#### Pharmacy Qualification in Brief

##### PHARMACEUTICAL CHEMIST

1. Pass recognised Preliminary examination.
2. Serve apprenticeship (a) four years under pharmaceutical chemist or (b) four years under registered druggist and two years under pharmaceutical chemist.
3. Attend approved courses in Part I.
4. Pass Part I (a) Botany, (b) Chemistry, (c) Physics, (d) Business Methods. Fee £4 4s.
5. Attend approved courses in Part II.
6. Pass Pharmaceutical Chemist examination at age of twenty-one (a) Chemistry (2), (b) Pharmacognosy, (c) Pharmacy, (d) Practical Pharmacy, (e) Latin, (f) Prescription-Reading. Fee £8 8s.



## Educational Information



**CHEMISTRY, PART II.**—General knowledge of B.P. and common alkyl and aryl compounds, adulterations in B.P. inorganic and organic compounds and methods of determining purity. *Practical:* Identify specified organic compounds; detect adulterants of B.P. substances; volumetric and nitrometric determinations; methods of preparing more important inorganic and specified organic compounds; alkaloidal determinations.

The examinations are held in June and December, examination fees being £4 4s. for Part I and £8 8s. for Part II. For re-examination, half these fees.

### Pharmaceutical Society's Schools

67 Lower Mount Street, Dublin

Director: Chemistry School, Professor H. Norminton, M.Sc. Botany and Materia Medica School, Mr. A. F. Collins, B.Sc., M.P.S.I., H. Dip. Pharmacy Class, Miss K. Fogarty, M.P.S.I., on Mondays, Wednesdays and Fridays from 7.30 to 9.30, and the student must attend at least 75 per cent. of the lectures to obtain a certificate. Two sessions commence on October 1 and January 1. Fees: £4 4s. for students of the Society's Schools; £8 8s. for students of other schools. Theoretical and practical chemistry, *Night Class*, October 1 to May 31, Mondays, Wednesdays and Fridays, from 8-10 p.m. Fees: £8 8s. *Day Class*, March 1 to June 30, Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays, 3.30 to 5.30 p.m. Fees: £8 8s. Botany and materia medica, two sessions, October 1 to January 31 and February 1 to May 31, Tuesdays and Thursdays, 7.45 to 9.45 p.m. Fees: £3 3s.

### Belfast Municipal College of Technology

Head of Chemistry Department: Professor H. Wren, D.Sc.; lecturers in pharmaceutical subjects, C. J. Still, Ph.D., M.Sc., C. W. Young, Ph.C., Miss Hughes, B.A., M.Sc., A.I.C., J. W. Porter, F.I.C., F.R.C.Sc.I., A. J. Thorburn, B.Sc., Ph.C. Under the co-ordination scheme with the Queen's University of Belfast students may also obtain the degree of B.Sc. in Pharmaceutics.

### Apothecaries' Assistants

#### LONDON

Section 17 of the Apothecaries Act, 1815, enacted that an examination should be instituted for the purpose of granting certificates to persons "to act as assistant to an apothecary in compounding and dispensing medicines." The certificate granted only entitles the holder to dispense under supervision. The examination is held four times a year, the conditions are as follows:—

(a) The candidate (male or female) must be at least eighteen years of age. (b) A certificate of general education up to the age of sixteen must be produced. (c) A certificate of instruction in chemistry for not less than 200 hours during nine months, signed by a principal teacher of chemistry at a university, college, technical institute, school of pharmacy, or a secondary school, or by a person possessing a university degree in science, or a fellowship of the Institute of Chemistry. (d) A certificate of instruction in practical pharmacy and materia medica for not less than 200 hours during nine months, signed by an assistant of the Society holding a public appointment, a registered pharmacist, or a registered medical practitioner. (e) The candidate must pass an examination in (1) compounding and dispensing medicines (a practical and oral examination), (2) chemistry, materia medica, pharmacy, and the translation of prescriptions (an oral examination). Fee £6 6s.

Particulars are obtainable from the Registrar, Society of Apothecaries of London, Water Lane, London, E.C.4.

#### DUBLIN

The Apothecaries' Hall of Ireland has a similar examination for the certificate of assistant to an apothecary. The examination is held monthly, August and September excepted. Fee, £5 5s. Particulars from the Registrar, 95 Merrior Square, Dublin.

## Books for Students

The following list contains some of the popular text-books for pharmaceutical students:—

#### BIOLOGY

"Biology for Students of Pharmacy," Moore (Arnold), 15s.  
"Biology for Pharmaceutical Students," Maugham and Hockley (Baillière), 21s.

#### BOTANY

"Pharmaceutical Botany" (C. & D. Office), 5s.  
"Text-Book of Botany for Medical and Pharmaceutical Students" and "Practical Botany," James Small (Churchill), 21s. and 10s. 6d. respectively.  
"Intermediate Botany," L. J. Brimble (Macmillan), 8s. 6d.  
"Recent Advances in Botany," Barton-Wright (Churchill), 12s. 6d.

#### CHEMISTRY

"Text-Book of Inorganic Chemistry," Senter (Methuen), 7s. 6d.  
"Inorganic Chemistry," Lowry (Macmillan), 25s.  
"A Student's Manual of Organic Chemistry," Thorpe and Whiteley (Longmans), 9s.  
"Volumetric Analysis," Hampshire (Churchill), 8s. 6d.  
"Sutton's Volumetric Analysis," Mitchell (Churchill), 35s.  
"Organic Chemistry for Medical, Intermediate Science and Pharmaceutical Students," Macbeth (Longmans), 7s.  
"Quantitative Chemical Analysis," Clowes and Coleman, revised by Stockdale and Dexter (Churchill), 18s.  
"Outlines of Organic Chemistry," Holmyard (Arnold), 7s. 6d.  
"Modern Inorganic Chemistry," Mellor, revised by Parkes (Longman), 12s. 6d.

#### FORENSIC PHARMACY

*The Chemist and Druggist Poisons Guide* (C. & D.), 4s. 6d.  
"Poisons Law," H. N. Linstead (Pharmaceutical Press), 5s.

#### PHARMACEUTICS

"British Pharmacopœia," 1932 (Constable), 21s.  
"Addendum 1936 to the British Pharmacopœia" (Constable), 5s.  
"British Pharmaceutical Codex," 1934 (Pharmaceutical Society), 35s.  
"The Science and Practice of Pharmacy," R. R. Bennett and T. T. Cocking (Churchill), 21s. (2 vol.).  
"A Course in Practical Pharmacy," J. W. Cooper and F. N. Appleyard (Pitman), 7s. 6d.  
"Art of Dispensing" (C. & D. Office), 10s. 6d.  
"A Handbook to Pharmacy," W. Kirkby (C. & D.), 5s.  
"A Text-Book of Pharmaceutics," Bentley (Baillière), 15s.  
"Latin for Pharmaceutical Students," J. W. Cooper and A. C. McLaren (Pitman), 6s.

#### PHARMACOGNOSY

"Text-Book of Pharmacognosy," Greenish (Churchill), 25s.  
"Practical Pharmacognosy," Wallis (Churchill), 12s. 6d.  
"Text-Book of Pharmacognosy," Trease (Baillière), 21s.  
"Text-Book of Pharmacognosy," J. W. Cooper and T. E. Denston (Pitman), 18s.  
"Drug Atlas for Students of Pharmacy and Medicine," Scarnell Lean (Longman), 2s. 6d.

#### PHYSICS

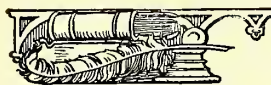
"Manual of Physics," J. A. Crowther (Oxford University Press), 14s.  
"A Class Book of Physics," R. Gregory and H. E. Hadley (Macmillan), 6s. 6d.  
"Practical Physics for Inter. B.Sc. Students," H. M. Browning and L. Starbuck (Blackie), 3s. 6d.

#### PHYSIOLOGY

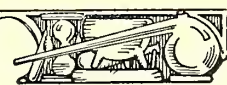
"Manual of Human Physiology," Sir Leonard Hill (Arnold), 6s. 6d.  
"Aids to Physiology," H. Dryerre (Baillière), 3s. 6d.  
"Bainbridge and Menzies' Essentials of Physiology," H. Hartridge (Longmans), 14s.  
"Human Physiology," Winton and Bayliss (Churchill), 15s.

#### ZOOLOGY

"Outlines of Zoology," Thomson (Oxford Univ. Press), 21s.



## Educational Information



### Scholarships and Prizes

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN offers annually three medals for competition by pharmaceutical chemists who have passed the Pharmaceutical Chemist Qualifying examination, and were members or student-associates of the Society at the time of passing. The (written) examination is in materia medica, embracing pharmaceutical chemistry, pharmaceutics, pharmacognosy, and physiology. The first prize is the Pereira silver medal and books; second, the Society's silver medal and books; and third, the Society's bronze medal and books. The Society also has in its gift the following:—

*The Jacob Bell Scholarship.*—A scholarship of the annual value of about £70, offered annually by the Society. The award also includes a gift of books. The scholarship is tenable for one or two years in respect of various courses of study. Details are obtainable from Mr. Hugh N. Linstead, Secretary and Registrar, 17 Bloomsbury Square, London, W.C.1.

*The Burroughs Scholarship* has been combined with *The Redwood Scholarship* and *The Ransom Fellowship* for affording pharmaceutical chemists or university graduates in pharmacy opportunities of working in the research laboratories of the Society. Each scholarship is tenable for two years, and each holder of a scholarship receives apparatus and £100 per annum. The annual sequence of the scholarship is as follows: Burroughs; Ransom; Redwood; Ransom. Particulars may be obtained from the Secretary of the Society.

*The Devon and Cornwall Exhibition in Pharmacy*, of the annual value of about £25, is tenable at the University College of the South-West, Plymouth, and is applied to the payment of tuition fees. Candidates must have been trained during a specified period in Devon or Cornwall.

*Herbarium Prizes.*—The Council of the Society offers annually to its student-associates a silver medal, a bronze medal and certificates of honour for an herbarium of not more than 150 British plants collected in any part of the British Isles. Further particulars from the Registrar of the Society.

*The Charles James Hewlett Memorial Exhibition*, of the value of about £15, is awarded annually on the recommendation of the College staff to the student-associate (other than a Bell scholar) who most distinguishes himself during attendance at the first year's course for the Pharmaceutical Chemist Qualifying examination or for the B.Pharm. degree.

*Leverhulme Scholarships.*—A fund endowing three scholarships of the annual value of £60 each was presented to the Society by the late Lord Leverhulme in 1923. The first scholarship carries with it a gold medal and £5 worth of books, and the second a prize of books to the value of £5. Particulars from the Registrar of the Society.

*The Manchester Pharmaceutical Association Scholarship* is open to student-associates of the Pharmaceutical Society who have served an apprenticeship in Lancashire, Cheshire, or the High Peak Parliamentary Division of Derbyshire. It has an annual value of £45.

*The Petrie Trust Bursary*, of the annual value of about £16, is awarded each year to a registered apprentice or student who has completed a three-years' apprenticeship in the city or county of Aberdeen. Further particulars may be obtained from Mr. J. G. Mutch, 90 King Street, Aberdeen.

*The Rammell Studentship*, of the value of £100, is tenable for a year in the Society's Pharmacological Laboratories by a pharmacist or last-term student.

*Nottingham University College Studentships.*—Two studentships of the annual value of £30 each are awarded, on the recommendation of the Council, by the governing body of University College, Nottingham. Further particulars in the Society's Calendar.

Until further notice, the Jacob Bell, Manchester and Leverhulme scholarships and the Devon and Cornwall exhibition will be awarded in accordance with regulations of which the following paragraphs are an abridgement.

1. There shall be one examination for all the scholarships, which will be conducted by an examiner or examiners appointed by the Council of the Society, and the awards made by the Council on the recommendations of such examiner or examiners.

2. The examination shall be held on the second Tuesday and Wednesday in June of each year in Aberdeen, Birmingham, Cardiff, Edinburgh, Exeter, Leeds, London, Manchester, Newcastle, and Nottingham, or such other centres as may be selected.

3. At the time of giving notice of their intention to enter for the examination, competitors must have complied with the conditions laid down in the Society's Calendar.

4. No person shall be awarded more than one scholarship, but a person may compete for all the scholarships for which he is eligible at the same examination. Should he gain marks entitling him to the award of more than one scholarship he will be permitted to select the scholarship he wishes to have awarded to him.

5. On the day on which the examination is held, competitors must be not more than twenty-two years of age.

6. Competitors must give notice to the registrar in London on or before May 15 in the year in which the examination is to take place. The notice must be accompanied by a registrar's certificate of birth, an employer's testimonial, a declaration as to practical training, and in the case of an entrant for a Nottingham studentship evidence of having matriculated at London University or being qualified for exemption. At the same time the competitor must state (a) the examination centre at which he wishes to attend and (b) in the case of the Bell and Manchester scholarships and the Nottingham studentship, the language subject in which he wishes to be examined.

7. The subjects of the examination (which is conducted by means of written papers) are English essay, pharmacy, chemistry, Latin (or French or German), botany, business methods. (Full particulars are printed in the Society's Calendar.)

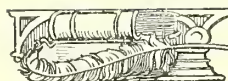
THE PHARMACEUTICAL SOCIETY OF IRELAND.—The Council awards annually a gold and silver medal to pharmaceutical chemists who have during the year passed the Licence examination on the first attempt and obtained the following standard of marks: For the gold medal, not less than 240 marks out of 300, and 65 in each of the three subjects; for the silver medal, 230 marks out of 300, and 60 in each of the three subjects. Particulars may be obtained from the Registrar.

THE KINNINMONT SCHOLARSHIP.—Instituted in 1894 by the late Alexander Kinninmont, Ph.C., for pharmacy students in Glasgow and the West of Scotland. The scholarship, of the value of £10 10s., tenable at the Royal Technical College, Glasgow, is awarded on the result of a written examination in chemistry, botany and physics, held in Glasgow in May or June of each year.

THE FAIRCHILD SCHOLARSHIP was founded in 1904 by Fairchild Brothers & Foster. The object of the scholarship is to encourage study during apprenticeship. The examination is designed not as a test for completed studies, but to see how far the student has used his time and powers of observation during apprenticeship so as to fit himself or herself to appreciate fully the subsequent course of study. The value is £60, and, in addition, there are prizes of £5 for the best student in England, Scotland, Wales and Ireland, apart from the scholarship. The examination takes place during June, and entries should be made on, or before, June 1. The examination is held in London, Manchester, Edinburgh, Cardiff, Dublin and Belfast, the amount over 5s. railway fare being refunded. On the day the examination is held candidates must be not more than twenty-two years of age, and all competitors must be registered students or apprentices of pharmacy in their respective countries. The successful student must commence his studies within the year after winning the scholarship. The subjects are: Chemistry and physics, botany, practical pharmacy and prescription-reading, business knowledge. The trustees are Mr. T. Marns, London; Mr. T. M. Ridley, Carlisle; Mr. H. Brindle, Manchester; Mr. William Kirkby, Birmingham. Syllabus giving full particulars can be obtained from the Secretary to the Trustees, Mr. Herbert Skinner, Ph.C., Albert Chambers, 65 Holborn Viaduct, London, E.C.1.

### Fairchild Examination Results, 1939

The 1939 examination for the Fairchild scholarship and prizes was held on June 15 at the following centres:—Belfast (supervisor, Mr. D. L. Kirkpatrick); Cardiff (supervisor, Mr. Rees Vernon Lloyd); Edinburgh (supervisor, Miss Brew); London (supervisor, Miss Maddock); Manchester (supervisor, Mr. T. Miller). Fourteen candidates sat, of whom two represented Ireland, one Wales and eleven England. Questions for the examination were set and assessed by:—Mr. H. Brindle, B.Sc., F.I.C., Ph.C. (chemistry and physics); Mr. T. Marns, M.P.S. (business knowledge and sale of poisons); Mr. T. Ridley, Ph.C. (practical pharmacy and prescription reading); Professor J. Small, D.Sc., Ph.C. (botany and pharmacognosy). The following awards were made:—Mr. John Ashcroft received the highest marks and was awarded the scholarship, value £60. The prize for England, value £5, was awarded to Mr. Thomas E. Howden.



## Educational Information



### Medicine

A CHANGE in the method of entry to the medical profession has come into force during the past year. Particulars will be found under the heading "Registration as Medical Students." The new regulations supersede those of June 1934, though without materially modifying the standard of knowledge required of students at the outset. Changes of some kind must from time to time be made in the curriculum, in order that the expansion in the scope of medical research may find its counterpart in the preparation of candidates for examination. The newly qualified medical man will then be able to choose a field for the exercise of his talent with good prospects of success. Not only research but also the Army, the Navy, the Air Force, public posts of various kinds and finally general practice have their various claims, and the choice between them should be largely a matter of individual preference.

The General Medical Council is the governing body for the purposes of examination, registration and discipline in the United Kingdom. The Council issues a "Memorandum on Admission of Students to Schools of Medicine and Schools of Dentistry." Candidates for the profession are required to possess, at the outset, a general education of the standard needed for matriculation in arts or science at a British University, together with evidence of having passed an approved pre-registration examination in elementary chemistry and elementary physics. There are two types of medical qualification, the degrees bestowed by the universities and the diplomas given by such bodies as the Royal Colleges of Physicians and Surgeons.

#### Preliminary Examinations

The General Medical Council issues a list of examining bodies, the examinations of which in general education fulfil the conditions laid down by the Council as to admission as a medical student. Any preliminary examination must include: (1) English; (2) elementary mathematics; (3) a language other than English; (4) an additional subject or subjects as required by the regulations of the examination selected. A Joint Matriculation Board (Secretary, 315 Oxford Road, Manchester, 13) governs the Matriculation examinations of the Universities of Manchester, Liverpool, Leeds, Birmingham and Sheffield. The College of Preceptors, Bloomsbury Square, London, W.C.1, holds in March and September of every year, in Birmingham, Blackburn, Glasgow, Leeds, Liverpool, London, Manchester and Swansea, a Professional Preliminary examination for certificates recognised by the General Medical Council and other bodies. The examination may also be held at other specified centres if sufficient entries are received. A similar examination is held by the Educational Institute of Scotland, 46 and 47 Moray Place, Edinburgh, 3, in February, May, August and November. The examination centres are Edinburgh, Glasgow, Liverpool, London and Dublin. The subjects which are compulsory and those which are optional differ to some extent in the requirements of the various universities and other qualifying bodies; consequently, the candidate for a degree must either matriculate at the university at which he or she intends to study or ascertain that the Preliminary examination certificate held is one that will be accepted.

#### Registration as Medical Students

The following is a summary of the necessary procedure:—

- (1) Pass an approved examination in general education.
- (2) Pass an examination conducted or recognised by a licensing body in chemistry and physics.
- (3) Having attained the age of eighteen, enter one's name at a medical school recognised by one of the licensing bodies.
- (4) Obtain registration as a medical student.
- (5) Study for a minimum of five years certain prescribed subjects.
- (6) Pass intermediate examinations; at the end of the fifth year pass a qualifying examination which will entitle the student to receive from a licensing body a qualification enabling him to obtain registration.

A few bodies allow medical studies to be commenced at approved teaching institutions other than medical schools, and this principle is extended to graduates in arts or science at approved universities. No general exemption of this kind is given to registered pharmacists except as regards training in practical pharmacy. The Preliminary examination must have been of the standard given in the regulations, but the colleges and universities consider applications for exemption from any part of the medical examinations when such subjects as chemistry and biology have been taken at recognised institutions. Each examining body issues regulations as to the studies required, and the schools of medicine arrange their courses in conformance with such requirements.

#### University Degrees

The conditions, framed by the universities of the places named, for the ordinary degrees (M.B., Ch.B., or the equivalent degrees) are given in the following paragraphs.

**ABERDEEN.**—The curriculum extends over a period of not less than five years and two terms. Numerous bursaries, scholarships and fellowships are available. Further information may be obtained from the Secretary to the University.

**BELFAST.**—Three academic years at least, out of the five and a half prescribed for the curriculum, must be passed in the University. The Dean of the Faculty of Medicine is Professor W. J. Wilson, M.D.

**BIRMINGHAM.**—The course extends over six years, and there are five examinations. Valuable entrance and other scholarships are available. A minimum of three years must be spent in the University. Dean of the Medical Faculty, Dr. Stanley Barnes, Medical School Buildings, Hospitals Centre, Birmingham, 15.

**BRISTOL.**—There are three examinations. The curriculum occupies five years subsequent to the passing of the Preliminary Science examination in chemistry, physics and biology. Particulars of scholarships and prizes are given in the University (Faculty of Medicine) prospectus. Secretary and Registrar, Winifred Shapland.

**CAMBRIDGE.**—Students are required to pass or obtain exemption from the Previous examination before proceeding to the examinations for the degrees of M.B., B.Chir. The Registrar is Mr. E. Harrison, M.A.

**DUBLIN.**—Candidates for the degrees in medicine, surgery and obstetric science must be of B.A. standing and must have completed five years in medical studies. Dean of the Faculty of Physics, Dr. J. W. Bigger.

**DURHAM.**—There are four examinations for the M.B., B.S. degrees, and the course of study extends over five years, three of which must be spent at the University's Medical School. Numerous bursaries and prizes are offered. Application should be made to the Dean of Medicine, The Medical School, King's College, Queen Victoria Road, Newcastle-upon-Tyne.

**EDINBURGH.**—The course for the degrees of M.B. and Ch.B., which are not conferred separately, extends over not less than five years. There are four examinations. Several scholarships, bursaries and prizes are offered for competition. Dean of the Faculty of Medicine, Professor Sydney Smith, M.D.

**GLASGOW.**—There are four examinations. The period of study prescribed is six years. Various bursaries and prizes are open to competition. The Dean is Professor J. Shaw Dunn, M.D.

**IRELAND (EIRE).**—The National University of Ireland confers the M.B., B.Ch., and B.A.O. degrees (simultaneously) upon matriculated students who have passed the Pre-medical examination and four other examinations. Particulars may be obtained from the Registrar, National University, Dublin.

**LEEDS.**—There are four examinations, and the course of study extends over five years and two terms. Dean of the Faculty of Medicine, Mr. H. Collinson, C.M.G., D.S.O., M.B., M.S.

**LIVERPOOL.**—The curriculum extends over six years, three of which must be passed in the University. There are three examinations. Fellowships, scholarships and prizes are available. Dean of the Faculty, Professor W. V. Dilling, M.B., Ch.B.

## Educational Information

**LONDON.**—The normal course of study extends over five and a half years, and there are three examinations. Several studentships and research grants are available. Internal and external students should apply to the Academic Registrar, Senate House, University of London, W.C.1.

**MANCHESTER.**—Four examinations for the two degrees, after study extending over not less than five years, must be passed. Scholarships, exhibitions and other competitive prizes are offered to students. Full information is obtainable from the Dean of the Medical School (as to classes) and the Registrar (as to examinations).

**OXFORD.**—Candidates must hold an Oxford arts degree as a prerequisite. Two examinations are held (after a preliminary examination) for the degree of B.M.; the degree of B.Ch. is granted with that of B.M. after passing the second examination. The minimum time in which the degrees can be obtained is about seven years from the commencement of "residence." The statutes are published at the Clarendon Press.

**ST. ANDREWS.**—The course for the M.B., Ch.B. degrees (which are not separable) extends over at least five years, and there are four examinations. Dean of the Faculty, Professor D. F. Cappell, M.D., Medical School, Dundee.

**SHEFFIELD.**—There are four examinations for the M.B., Ch.B. degrees, the curriculum occupying five and a half academic years. Several scholarships are available. Dean of the Faculty, Professor G. A. Clark, M.D.

**WALES.**—The course of study is divided into two parts, each extending over three academic years. A degree in science or arts of the University of Wales or of some approved university is necessary before medical degrees can be conferred. Certain of the courses pursued for the degree in science or arts may be counted as required for the medical degrees. The constituent colleges are Aberystwyth, Bangor, Cardiff and Swansea. Provost, A. W. Sheen; Secretary, S. C. Edwards, The Parade, Cardiff.

### Medical and Surgical Diplomas

M.R.C.S.ENG. AND L.R.C.P.LOND.

The Examining Board of the Royal College of Physicians of London and the Royal College of Surgeons of England (known as "the Conjoint Board") grants a joint diploma for registration as a general medical practitioner. There are two professional examinations (in addition to the Preliminary examination and Pre-medical examination) during the five years' curriculum subsequent to registration as a medical student.

The subjects of the *First Professional Examination* are:—Part I, (a) Anatomy, including histology and embryology; (b) Physiology, including biochemistry. Part II, Pharmacology and materia medica. Candidates must take parts (a) and (b) of Part I together until they have passed in one or both parts. Candidates will not be allowed to pass in one part unless they obtain at the same time at least half the number of marks required to pass in the other part. Part II may be passed at any time before the candidate enters for the Final examination. Before admission to the First examination, candidates must produce evidence of having attended specified courses of instruction.

The subjects of the *Final Professional Examination* are:—Part I, Pathology (including morbid anatomy, morbid histology and clinical pathology) and bacteriology. Part II, Medicine, including medical anatomy, forensic medicine and public health. Part III, Surgery, including surgical anatomy and the use of surgical appliances. Part IV, Midwifery and gynaecology. Candidates will be required to produce evidence of having completed specified courses of study.

Synopses of the examination can be obtained from Mr. H. H. Rew, Secretary of the Examining Board, 8-11 Queen Square, London, W.C.1.

### SCOTTISH TRIPLE QUALIFICATION

The Royal Colleges of Physicians and Surgeons of Edinburgh, with the Royal Faculty of Physicians and Surgeons of Glasgow, grant three diplomas ("Triple Qual.") jointly entitling the holder to registration as a general medical practitioner. The three examinations are held in Edinburgh and Glasgow. The course of study must occupy not less than five years. Full particulars may be obtained from the Registrar, 18 Nicolson Street, Edinburgh, or the Registrar, 242 St. Vincent Street, Glasgow.

### IRISH QUALIFICATION

Particulars of the examination of the Irish Conjoint Board for the licences in medicine, surgery and midwifery may be obtained on application to the Secretary of the Committee of Management, Royal College of Surgeons, St. Stephen's Green, Dublin.

### LONDON SOCIETY OF APOTHECARIES' DIPLOMA

The Society of Apothecaries of London grants a diploma (L.M.S.S.A.) in medicine, surgery and midwifery. The Final examination is held monthly, except in September, and comprises:—(a) Principles and practice of surgery, including surgical pathology, surgical anatomy, operative manipulation, instruments and appliances. (b) Principles and practice of medicine, including therapeutics, pharmacology, pathology, bacteriology and morbid histology; forensic medicine, hygiene, mental diseases, and the theory and practice of vaccination. (c) Midwifery, gynaecology, diseases of new-born children and the use of obstetric instruments. Sections (a), (b) and (c) may be taken separately. The minimum period of medical study extends over five years (fifty-seven months). The fee for the Pre-medical examination is £5 5s., and for the Licence £26 5s., which may be paid in three instalments. Members of the Pharmaceutical Society of Great Britain are required to pass a Preliminary examination in general education in accordance with the registration requirements of the General Medical Council. They are exempted from the subjects of chemistry and physics in the Pre-medical examination, and are required to complete the full curriculum and examinations. Application may be made to the Registrar, Society of Apothecaries of London, Water Lane, E.C.4.

### DUBLIN APOTHECARIES' DIPLOMA

The Apothecaries' Hall of Ireland grants a diploma (L.A.H.) to candidates who pass the requisite examinations. There are three examinations, with fees of £10 10s., £10 10s. and £21 respectively. Particulars may be obtained from the Registrar of the Apothecaries' Hall, 95 Merrion Square, Dublin.

### Medical Schools

The following are the principal medical schools in the United Kingdom:—

#### LONDON

The following medical schools are constituents of London University:

*Charing Cross Hospital Medical School*, Chandos Street, W.C.2.—The School contains a large and well-equipped library and a pathological museum. Scholarships and prizes to the value of about £700 are awarded every year. Dean, Mr. Eric A. Crook, M.Ch., F.R.C.S.

*Guy's Hospital Medical School*, London Bridge, S.E.1.—Several scholarships are obtainable by students, and a residential college (facing the hospital) is open. Communications should be addressed to the Dean of the Medical School, Mr. T. J. Evans, M.A.

*King's College, Faculty of Medical Science*, Strand, W.C.2.—Students are prepared for all the usual pre-medical and intermediate examinations in medicine and surgery. Scholarships and prizes exceeding £600 in value are awarded annually. Inquiries should be addressed to the Dean of the Faculty of Medicine.

*King's College Hospital Medical School*, Denmark Hill, S.E.5.—Scholarships to a total value of £1,530 are offered annually. Secretary, Mr. S. C. Ranner, M.A.

*London Hospital Medical School*, Turner Street, E.1.—Scholarships open to competition, and numerous prizes in various subjects. Dean, Dr. A. E. Clark-Kennedy, M.D., F.R.C.P.

*London (Royal Free Hospital) School of Medicine for Women*, Hunter Street, W.C.1.—Dean, Miss Elizabeth Bolton, C.B.E., M.D., B.S. A list of scholarships (total annual value, £2,000) and other particulars may be obtained from the Warden and Secretary.

*Middlesex Hospital*, Mortimer Street, W.1.—The Medical School, which includes the Bland-Sutton Institute of Pathology, the Courtauld Institute of Biochemistry, the Ferens



## Educational Information



Institute of Otolaryngology and the Barnato-Joel Research Laboratories, is fully equipped for teaching the entire curriculum. Entrance fee, £15 15s.; annual fee, £50; clubs, sub. (annum), £5 5s. Two entrance scholarships, value £100 each, and four university scholarships, value £100 each, are awarded annually. Other scholarships and prizes to the total value of £1,000 are also awarded each year. Dean, Dr. H. E. Boldero, F.R.C.P., Secretary, Mr. R. A. Foley, F.C.C.S.

*St. Bartholomew's Hospital Medical College*, Smithfield, E.C.1.—The total value of the scholarships and prizes awarded annually is over £1,900. Dean, Sir Girling Ball, F.R.C.S.

*St. George's Hospital*, Hyde Park Corner, S.W.1.—Courses in preliminary and intermediate subjects are taken at King's College. There are several scholarships, exhibitions and prizes. Dean, Mr. M. F. Nicholls, M.Ch.

*St. Mary's Hospital Medical School*, Cambridge Place, W.2.—Entrance-scholarships, together with several studentships and prizes, are awarded annually. Dean, Sir Charles Wilson, M.C.

*St. Thomas's Hospital Medical School*, Albert Embankment, S.E.1.—Entrance scholarships and other prizes are open for competition. Secretary, Dr. R. J. C. Thompson.

*University College Hospital Medical School*, University Street, W.C.1.—Several scholarships and exhibitions are offered by competition. Dean, Mr. Gwynne Williams, M.S., F.R.C.S.

*Westminster Hospital Medical School*, 17 Horseferry Road, S.W.1.—Scholarships and prizes are awarded. Preliminary and intermediate studies are taken at King's College. Dean, Sir Adolphe Abrahams, O.B.E.

### OUTSIDE LONDON

ABERDEEN.—*University Faculty of Medicine*.—The total cost of obtaining the M.B., Ch.B. degrees is estimated at £250, including hospital fees, class fees, and degree fees. Clinical study is available at the Royal Infirmary and other local institutions. Applicants should communicate with the Secretary.

BELFAST.—*Queen's University of Belfast*.—Students are prepared, during a five and a half years' course, for the degrees of M.B., B.Ch., and B.A.O. The combined class and laboratory fee for four years is £105, payable in four instalments. This sum does not include hospital fees, which amount to about £130.

BIRMINGHAM.—*University Faculty of Medicine*.—The minimum cost of obtaining the double degree is estimated at £246. Combined courses for medical and dental degrees or diplomas can be arranged. Full information is obtainable at the Dean's Office, Medical School Building, Hospitals Centre, Birmingham, 15.

BRISTOL.—*University Faculty of Medicine*.—The approximate cost of obtaining the conjoint degrees is £279, payable by six annual instalments.

CARDIFF.—*The Welsh National School of Medicine* is a constituent school of the University of Wales. Composition fees for six years amount to about £300. Application for particulars may be made by letter to the Provost or Secretary.

CORK.—*University College* is a constituent college of the National University of Ireland. The calendar (price 6d.) is obtainable from the Registrar.

DUBLIN.—*Royal College of Surgeons' Schools of Surgery* are attached to the Royal College of Surgeons. The cost of obtaining the conjoint diplomas is estimated at £173 5s. Scholarships and prizes are obtainable. A syllabus may be obtained from the Registrar, Royal College of Surgeons.

*School of Physic, Trinity College*.—The cost of qualifying after obtaining the B.A. degree amounts to £151. Registrar, G. L. Allen, M.A.

*University College*.—A constituent college of the National University of Ireland.

EDINBURGH.—*University Faculty of Medicine*.—The minimum cost of qualification is estimated at £268.

*School of Medicine of the Royal Colleges*.—The courses of study are suited to University and other qualifications. The minimum cost of education for the triple qualification, including examination fees, is about £180, payable by instalments. Scholarships and bursaries are available. Calendar, rs. post free, on application to the Dean, Surgeons' Hall, Edinburgh.

GALWAY.—*University College*.—A constituent college of the National University of Ireland.

GLASGOW.—*The University Faculty of Medicine*.—The division of studies is similar to that adopted at Edinburgh, and the fees are about equal.

*The Anderson College of Medicine*, Dumbarton Road, W.—Instruction is given in the various subjects of the curriculum. Clinical work is carried on at the Western and Royal Infirmaries.

*St. Mungo's College*, 86 Castle Street.—The total fees payable for preparation for a Scottish or English qualification amount to rather more than £100.

LEEDS.—*University Faculty of Medicine*.—The total cost of education for the M.B., Ch.B. degrees is estimated at £372. Registrar of the University, A. E. Wheeler, M.A.

LIVERPOOL.—*University Faculty of Medicine*.—The composition and other fees for a six-years' course are estimated at £382.

MANCHESTER.—*University Faculty of Medicine*.—The fees for the training and examination for the M.B., Ch.B. degrees are estimated at £360. Courses are also available for other degrees and diplomas. Particulars may be obtained (price 3d.) on application from the Registrar.

NEWCASTLE-UPON-TYNE.—*The Medical School, King's College*.—The fees for students registering under regulations which came into force on November 1, 1938, for systematic, practical and clinical instruction for M.B., B.S. are £230, including £35 for the first (Pre-Medical) examination. The fees are payable by annual instalments varying from £35 to £40.

ST. ANDREWS.—*University Faculty of Medicine*.—The inclusive fee for five-years' University courses for the M.B., Ch.B. degrees is £126, and for the clinical course is £56, both payable in five annual instalments. Advisers of Studies, Professor D. F. Cappell, M.D., Dundee, and Professor D. Waterston, M.D., St. Andrews.

SHEFFIELD.—*University Faculty of Medicine*.—A five and a half years' course is provided for. The composition-fee is £42 for first, second, third, fourth or fifth years; £28 for sixth year.

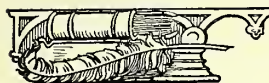
SWANSEA.—*University College*.—A constituent college of the University of Wales. Registrar, Mr. Edwin Drew.

## Dentistry

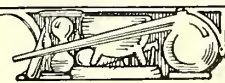
As is the case with medical students, dental students are now registered by their respective schools or licensing bodies. After qualification they have a wide field of selection, especially in view of the recent increase in the Army, the Navy and the Air Force. At present the smallness of the number of dentists added to the Register annually suggests a shortage of qualified people in proportion to the population of the country. The Dental Board of the United Kingdom, which is the body entrusted with the duty of carrying out the requirements of the General Medical Council with regard to dentists, gives substantial grants to dental students in approved cases. The curriculum, as indicated in the following paragraphs, is in many respects similar to that of medical students.

### Dental Training

The registration of dental students is subject to the following conditions:—The candidate must (1) be not less than eighteen years of age, and (2) have passed a recognised Preliminary examination (see "Preliminary Examinations" under "Medicine") and an additional examination. Candidates for a diploma in dental surgery should produce certificates of having been engaged during four years in professional study, and of having received two years' instruction in mechanical dentistry. No portion of practical instruction which is taken prior to the date of registration may be reckoned as a portion of the four years of professional study. It is recommended that instruction in dental mechanics be taken at a recognised dental hospital or school. If any part of such instruction is taken by the candidate as a pupil with a registered dentist, the time required to be devoted to it shall be at least twice the time required for the corresponding instruction taken at a dental school. The licence of the Royal



## Educational Information



College of Surgeons of England takes high rank among registration qualifications.

The *First Examination* consists of the properties of dental materials, and the examination is held three times a year. The *Second Examination* consists of (1) general anatomy and physiology (2) special anatomy and physiology; (3) practical dental mechanics. The examination is held three times a year, and candidates may present themselves for the three parts of the examination together or separately on production of the required certificates of study. The *Final Examination* comprises (1) general surgery, medicine, pathology and bacteriology; (2) dental surgery and pathology and practical dental surgery. Candidates must have been engaged in recognised professional study for four years after passing the Pre-medical examination, and must have attended certain courses of instruction.

Inquiries should be addressed to the Director of Examinations, Examination Hall, Queen Square, London, W.C.1. Similar conditions apply to the qualifications of the following colleges:

**ROYAL COLLEGE OF SURGEONS, EDINBURGH.**—The course of study must occupy at least four years. The subjects are taken in four examinations. Information may be obtained from the Clerk of the College, 18 Nicolson Street, Edinburgh.

**ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.**—The general regulations are similar to those obtaining at Edinburgh. Particulars are obtainable from the Secretary of the Faculty, 242 St. Vincent Street, Glasgow, C.2.

**ROYAL COLLEGE OF SURGEONS IN IRELAND, St. Stephen's Green, Dublin.** There are three examinations. The Registrar will furnish particulars on application.

### University Degrees and Diplomas

**BELFAST.**—Five and a half years' study is compulsory for students for the degree of B.D.S., and four and a half years for candidates for the licence diploma. Regulations and other information may be obtained from the Secretary, Queen's University.

**BIRMINGHAM.**—The course for the Diploma (L.D.S.) occupies four years, and the course for the B.D.S. degree extends over five years.

**BRISTOL.**—The professional part of the dental curriculum occupies four calendar years (L.D.S.), or four and a half calendar years (B.D.S.), after passing a Preliminary Science examination in physics, chemistry and biology. Secretary and Registrar, Winifred Shapland.

**DUBLIN.**—Four and a half years must be spent in study for the degree of bachelor in dental science, and the B.A. degree is prerequisite. The arts and dental courses may be taken separately or concurrently. Details may be obtained from the Registrar of the School of Physic, Trinity College, Dublin.

**DURHAM.**—The University grants a licence and two degrees in dental surgery. The diploma course occupies four years, and the primary degree course five years. Particulars may be obtained on application to the Sub-Dean, Sutherland Dental School, Queen Victoria Road, Newcastle-upon-Tyne.

**IRELAND.**—The course of study for the B.D.S. degree of the National University of Ireland extends over at least four years, and there are five examinations. Constituent colleges, Dublin and Cork.

**LEEDS.**—There are three examinations, in addition to a prescribed course of study extending over five years for the degree and four years for the diploma. Registrar of the University, Mr. A. E. Wheeler, M.A.

**LIVERPOOL.**—There are four examinations for the degree of B.D.S. or for the licence in dental surgery (L.D.S.). Dean of the Medical Faculty, Professor W. J. Dilling, M.B., Ch.B.

**LONDON.**—The degree of B.D.S. is conferred after matriculation and three subsequent examinations, the second of which is taken in two parts. The curriculum extends over five years. For particulars apply to the Academic Registrar, the Senate House, University of London, W.C.1.

**MANCHESTER.**—The curriculum for the B.D.S. (four examinations) extends over five and a half years. The diploma course covers four years. Inquiries regarding examinations should be addressed to the Registrar of the University.

**ST. ANDREWS.**—The University grants a diploma and a B.D.S. degree in dental surgery, after four and five years'

study respectively. There are four examinations for the diploma and a fifth for the degree. There is also obtainable a diploma in public dentistry, the first of its kind, and a higher degree of M.D.S. For particulars apply to Professor H. Gordon Campbell, Dental Hospital, Park Place, Dundee.

**SHEFFIELD.**—Not less than five and a half years' study is required for the degree and four years for the diploma. There are three examinations for each. Registrar of the University, Mr. W. M. Gibbons, O.B.E., M.A.

### Dental Instruction

The following are the chief schools in the United Kingdom for instruction in the science and practice of dentistry:—

#### LONDON

**Guy's Hospital Dental School, London Bridge, S.E.1.**—Practical training is provided in the hospital. Particulars may be obtained from the Dean of the Dental School, Guy's Hospital, London, S.E.1.

**King's College Hospital Dental School, Denmark Hill, S.E.5.**—Complete instruction is given, in association with King's College, for dental degrees and diplomas. Dean, Mr. John B. Hunter, M.Ch., F.R.C.S.; Secretary of the School, Mr. S. C. Ranner, M.A.

**London Hospital Dental School, Turner Street, E.1.**—Full course (including dental mechanics) for L.D.S. diploma. Inquiries should be addressed to the Dean, Dr. A. E. Clark Kennedy, M.D., F.R.C.P.

**Royal Dental Hospital of London School of Dental Surgery, Leicester Square, W.C.2.**—Particulars of several scholarships are given in the calendar of the school. Dean, Professor H. Stobie.

**University College Hospital Dental School, Great Portland Street, W.1.**—Students are prepared for the L.D.S. R.C.S.Eng. and the B.D.S.London. Inquiries should be addressed to the Sub-Dean, Mr. J. L. Dudley Buxton, L.M.S.S.A., L.D.S., R.C.S.Eng.

#### OUTSIDE LONDON

**BELFAST.**—*Queen's University Faculty of Medicine.*—The combined class and laboratory fee is £23 12s. 6d. for the first year and £26 5s. for the remaining three and a half years. These fees do not include hospital fees, which amount to about £130. Entrance forms and other information may be obtained by applying to the Secretary.

**BIRMINGHAM.**—*University School of Dentistry.*—The Birmingham B.D.S. course costs approximately £360, and the diploma course £310. Particulars may be obtained from the Dean of the Medical Faculty or the University Registrar.

**BRISTOL.**—*University Faculty of Medicine (Dental Surgery).*—The inclusive cost of the curriculum is estimated at £274 in the case of the degree, and £258 for diploma students. Communications should be addressed to the Secretary and Registrar of the University.

**DUBLIN.**—*School of Dental Science, Trinity College.*—The total cost of obtaining the B.Dent.Sc. degree is given in the regulations as £336 15s., including arts and dental courses and examination and degree fees. For details apply to the Registrar of the School of Physic.

**Royal College of Surgeons' Schools.**—The College grants a diploma in dental surgery. Cost of tuition, £214; examination fees, £21. Registrar, Professor W. N. Rae.

**DUNDEE.**—*University of St. Andrew's Dental School, University College Buildings and Dental Hospital.* Composition fees amount to about £192. Adviser of Studies, Professor Gordon Campbell.

**DURHAM.**—(See "Newcastle-upon-Tyne.")

**EDINBURGH.**—*School of Medicine of the Royal Colleges.*—Communications should be addressed to Dr. John Orr, Dean of the School, Surgeon's Hall, Edinburgh.

**Incorporated Edinburgh Dental Hospital and School, 31 Chambers Street.**—General courses required for the dental diploma are taken in the school of medicine of the Royal Colleges. Hospital practice and clinical instruction in medicine and surgery are taken at the Royal Infirmary. The minimum



## Educational Information



cost of professional education and the licence in dental surgery of the Royal College of Surgeons of Edinburgh amounts to approximately £180.

GLASGOW.—*Dental Hospital and School*, 211 Renfrew Street, C.3. Estimated cost of curriculum and licence examinations, £232. Information regarding the School may be obtained from the Secretary, Royal Faculty of Physicians and Surgeons, 242 St. Vincent Street, Glasgow, C.2.

*Anderson College of Medicine*, Dumbarton Road, W.—Instruction is given at the Glasgow Dental Hospital in the various subjects of the curriculum.

LEEDS.—*Dental Department of the University*.—The cost of education (including books and instruments) for the degree of the University is given in the University Calendar as £410 (£371 for the diploma). Warden of the Dental School, Professor T. Talmage Read, F.R.F.P.S., L.R.C.P., L.R.C.S., L.D.S.

LIVERPOOL.—*University School of Dental Surgery*.—Candidates are prepared for the licence (L.D.S. Liverpool), the degree of B.D.S., and the higher degree of M.D.S. School fees for the B.D.S. amount to £308 16s. 7d.; those for the L.D.S. to £252 19s. 2d. Director of Dental Education, Professor H. H. Stones, M.D., M.D.S., L.D.S.

MANCHESTER.—*Dental Department of the University*.—Students are prepared for the B.D.S. of the University, the diploma of the University, or that of the R.C.S.Eng., and other licensing bodies. Candidates entering upon a course for the degree of Bachelor of Dentistry are required to have satisfied the requirements for entry upon a degree course and attained Credit standard in mathematics and a pass in mechanics in the School Certificate examination or its equivalent. The Professor of Dental Surgery, Dental Hospital, Oxford Road, Manchester, 13, answers inquiries concerning classes. A prospectus of the Dental Department (price 3d.) may be obtained on application to the Registrar.

*Victoria University of Manchester, School of Dental Surgery*, Oxford Road.—The total fees payable to the University, the Hospital, and the Infirmary for courses of study, examinations, loan of microscope, etc., and the conferment of the degree or diploma are approximately as follows:—For the B.D.S.Manch., £330; for the L.D.S.Manch. and for the L.D.S., R.C.S.Eng., £287. The total fees for women are in each case £1 11s. 6d. less. The required outfit in each case (tools, instruments and books) costs about £60 in addition. Prospectus on application to The Professor of Dental Surgery, The Dental Hospital, Oxford Road, Manchester, 13.

NEWCASTLE-UPON-TYNE.—*The Medical School (Dental Department)*, King's College, Queen Victoria Road.—Composition fees (including mechanical pupilage) for the degree amount to about £236, for the diploma to about £221. For particulars apply to the Sub-Dean, Sutherland Dental School, Newcastle-upon-Tyne.

SHEFFIELD.—*Dental Department, University Faculty of Medicine*.—Students are prepared for the degree (composition fees, 1st and 3rd years, £80; 2nd, 4th and 5th years, £30); or the diploma (composition fees, 1st and 2nd years, £80; 3rd and 4th years, £30) of the University. Registrar, Mr. W. M. Gibbons, O.B.E., M.A.

## Science

THE number of people holding a science degree in addition to a pharmaceutical qualification is relatively small. The possession of both is an asset in either of the directions in which, apart from pharmacy, scientific knowledge can be applied—in pure research on the one hand or industrial chemistry on the other. For the higher-paid posts in manufacturing houses and other institutions a Bachelor of Science degree (or that of Bachelor of Pharmacy) combined with Fellowship of the Institute of Chemistry and the Pharmaceutical Chemist diploma is almost indispensable. The following paragraphs give an outline of methods of procedure for pharmacists or students of pharmacy who wish to obtain two or more qualifications.

### Science Degrees

The regulations for a degree in science of London University require the student to pass three examinations, viz.: (1) The MATRICULATION, (2) the INTERMEDIATE examination in science, and (3) the FINAL examination. Regulations are published for (a) *internal* students who register as such and follow approved courses of instruction, and (b) *external* students who are examined without complying with a curriculum.

For particulars of MATRICULATION, Special University Entrance examination, apply to the Matriculation secretary, and for particulars of External examinations apply to the External Registrar, the Senate House, University of London, W.C.1. Regulations for Internal students are to be obtained from the Academic Registrar. The statutes of the University require all External students to register.

The INTERMEDIATE examination in science commences on the first Monday in July. An additional Intermediate examination is held in London, in the more usual subjects only, commencing on the fourth Monday of November. A candidate must have passed the Matriculation examination not later than the preceding January or June, respectively, or otherwise have fulfilled the conditions of exemption. Candidates are required to pass in any four subjects selected by themselves out of the following: (1) Pure mathematics; (2) applied mathematics; (3) physics; (4) chemistry; (5) geology; (6) botany; (7) zoology; (8) general principles of biology; (9) general physiology; (10) military studies; (11) geography; (12) psychology. At least one of the four subjects selected must be taken from among the first three. The fee is £6 6s.

The FINAL examination for B.Sc. takes place once a year, commencing on the third Monday prior to the first Monday in July. The B.Sc. degree is obtainable by passing the B.Sc. (general) examination in three subjects, or the B.Sc. (special) examination in one principal and one subsidiary subject. Successful candidates are awarded First-class Honours, Second-class Honours or a Pass Degree. An additional general examination for external students only is also held in the more ordinary subjects, commencing on the first Monday in November. Candidates must have passed the Intermediate about a year previously, and the Matriculation approximately three years previously. The fees are £7 7s. for the special examination and £6 6s. for the general examination. There are fifteen prescribed subjects to select from. The degrees Master of Science (M.Sc.) and Doctor of Philosophy (Ph.D.) are also open by examination. The D.Sc. degree is awarded for published work.

The English provincial, Irish, Scottish and Welsh universities confer the B.Sc. degree (*cum curriculo*), usually three years after matriculation with examinations at the end of each session.

### Diplomas in Chemistry

The Institute of Chemistry of Great Britain and Ireland conducts examinations for the Associateship of the Institute (A.I.C.). A certificate of having passed the examination of the Fellowship in Branch E (*see below*) is nowadays practically a necessity to obtain an appointment as a public analyst, and this branch frequently attracts pharmacists to become associates. The Regulations for the admission of students, associates and fellows are obtainable from the Registrar of the Institute, 30 Russell Square, London, W.C.1.

STUDENTSHIP.—At the commencement of their training candidates should register at the Institute (*see above*) as students. They must be British subjects, not less than sixteen years of age, have passed an approved preliminary examination and, at the time of application, be recommended by a teacher of chemistry at a recognised institution, or by a Fellow of the Institute. Annual registration, 10s.

ASSOCIATESHIP.—The Examination for Associateship (A.I.C.) occupies six days and consists of general theoretical chemistry (three papers) and practical chemistry. Fee, £5 5s. It is open to candidates who (i) have completed four years' systematic day course of study in prescribed subjects, including physics, mathematics, etc., to the required standard, at an

## Educational Information

institution approved by the Council; (ii) in lieu of first year of above have taken two years' full-time study at a secondary school recognised by the Board of Education or have had two years' experience in the laboratory of a Fellow of the Institute; (iii) in lieu of fourth year of above have had one year's satisfactory experience under a Fellow or in an approved laboratory or works; (iv) have obtained a degree including chemistry in the final examination, and have taken a further year's training in chemistry at a recognised institution or have had two other years' approved experience under a Fellow of the Institute or in an approved laboratory or works. In addition, applications are considered from candidates over twenty-five who have been at least eight years in practice and from candidates over thirty who have been engaged in the study and practice of chemistry for at least twelve years and attained responsible positions but who do not comply with the above requirements.

The following is a synopsis of the examination for the associateship:—

(a) *General Theoretical Chemistry*.—A thorough acquaintance with the fundamental laws and theories of chemistry, together with the properties and methods of preparation of the elements and their compounds, both inorganic and organic; and with application of chemistry in the arts and industries. Three papers, any of which may contain questions in inorganic, organic and physical chemistry, are set.

(b) *Practical Chemistry*.—Exercises in qualitative and quantitative (both gravimetric and volumetric) analysis, including the analysis of alloys, ores and minerals, and the determination of substances present in minute quantities, as impurities or otherwise, in commercial products. Preparation and purification of well-defined chemical substances. Organic analysis, including the recognition and determination of the elements and of typical groups and radicals; the identification of organic compounds; gas analysis; the determination of physical constants and the use of physical instruments employed by chemists.

Candidates are required to satisfy the examiners as to their ability to translate technical literature from French and German into English, with the aid of dictionaries.

Admission to the associateship without further examination may be granted to candidates who have obtained certain university degrees with first or second class honours in chemistry, or other diplomas recognised by the Council, subject to certain limitations as to courses of instruction and training.

**FELLOWSHIP**.—Admission to Fellowship of the Institute is by examination and is open to associates of three years' standing and not less than twenty-four years of age. An Associate desirous of being exempted from such examination will be required to produce satisfactory evidence that he has either (i) carried out original research of sufficient merit; or (ii) devised processes or inventions of sufficient merit; or (iii) acquired sufficient knowledge and ability, in the opinion of the Council, through having been engaged in important analytical, industrial, consulting or other work of a general or specialised character.

The Fellowship examination is more specialised, and candidates may enter for various branches. These are: (A) inorganic chemistry; (B) physical chemistry; (C) organic chemistry; (D) biochemistry; (E) the chemistry (including microscopy) of food and drugs and water; (F) agricultural chemistry; (G) industrial chemistry. Fees: for associates, £5 5s.; other candidates, £10 10s.

**SCHOLARSHIPS**.—Scholarships carrying free instruction and maintenance allowance are awarded annually as a result of science examinations held by the Board of Education. The *Salters' Institute* awards grants in aid to employees (over seventeen years old) in chemical works in or near London who desire to extend their education in chemical industry. Fellowships in research are offered annually. Applications for grants and fellowships should be made early in June to the Director, *Salters' Institute of Industrial Chemistry*, St. Swithin's Lane, London, E.C.4.

### Science Schools

At various educational centres throughout the country courses are available in scientific subjects covering, in general, the requirements for the National Certificates in Chemistry awarded by the Board of Education (see Rules No. 100, price 2d., obtainable at H.M. Stationery Office) and for the examinations of the Institute of Chemistry. For any other examinations,

the student must ascertain from the secretary of the institution whether the curriculum covers the requirements.

### LONDON

*Battersea Polytechnic*, Battersea Park Road, S.W.11.—Degree courses for B.Sc. (University of London) and for A.I.C. The course for full-time day students extends over three years, and for evening students five years. Courses for F.I.C. (branch E.). Evening courses in chemical technology include food and drugs, bacteriology, oils, fats and petroleum technology. Facilities are available for research work.

*Birkbeck College* (University of London), Breams Buildings, Fetter Lane, E.C.4.—Complete evening courses for University of London science degrees. Composition-fees for Intermediate (First year only), £5 a term, £12 a session. Final science examination (general or special), £5 15s. a term, £13 10s. a session.

*Chelsea Polytechnic*, Manresa Road, Chelsea, S.W.3.—Day and evening courses in chemistry and botany leading to the B.Sc., M.Sc. and Ph.D. degrees of London University and the A.I.C. (Institute of Chemistry). Special courses for F.I.C. (Food and Drugs). Classes in applied chemistry, milk control, hydrogen ion measurements, photomicrography, etc. Research in physical, organic and the chemistry of oils and fats. Fees: day, £21 per session; evening, £1 to £3 per session (three terms).

*Imperial College of Science and Technology*, South Kensington, S.W.7.—This college includes as integral parts the Royal College of Science, the Royal School of Mines and the City and Guilds College. The pre-graduate courses of study lead up to an associateship and B.Sc. degree in biology, botany, chemistry, geology, mathematics, physics and zoology at the Royal College of Science; in mining, mining geology, metallurgy and oil technology at the Royal School of Mines; and in engineering (aeronautical, civil, electrical, mechanical and chemical) at the City and Guilds College. Post-graduate courses and research may be undertaken by qualified candidates in all the subjects stated, and many others which are detailed in the prospectuses. The post-graduate work may lead up to the diploma of membership of the Imperial College and to the M.Sc., Ph.D., or D.Sc. of the University of London. Fellowships, scholarships and prizes are available. Fees (undergraduate students): £60 per session; post-graduate, £30. Any of the college prospectuses will be sent free on application to the Registrar, Imperial College, S.W.7.

*King's College*, Strand, W.C.2.—Courses are available in the faculty of natural science for students preparing for B.Sc. degree and Institute of Chemistry examinations. Annual fees: Intermediate course, £36 15s.; Final course, £52 10s.

*Northern Polytechnic*, Holloway, N.7.—The composition-fees for the Intermediate and Final B.Sc. courses are: Day, £20 per session; evening, from 12s. 6d. to 50s. per session. Evening classes in chemistry, botany, zoology, physics and photography cost from 8s. 4d. to 50s. per session.

*Queen Mary College* (University of London), Mile End Road, E.1.—Courses for intermediate and final degree examinations in science and courses of research for higher degrees. Fees: undergraduate, £30 12s. per session; post-graduate, £25 2s. per session.

*Royal Holloway College*, Englefield, Surrey.—For women students only, mainly residential. The college is a school of the University of London, and the degree courses include science.

*Sir John Cass Technical Institute*, Jewry Street, Aldgate, E.C.3.—Day and evening courses in chemistry, physics, mathematics, zoology, botany, metallurgy. Evening courses in bacteriology, brewing, biology, geology and fuel and petroleum technology. Sessional Fees (September to June): evening courses, range from 8s. 6d. to 60s. Day, full time, £20 per session, £7 10s. per term; part time, £2 per session or £1 per term for each morning or afternoon per week.

*University College*, Gower Street, W.C.1.—Fees for B.Sc. (general or special) course for three sessions amount to £147. Facilities for post-graduate study. Fees: £29 8s. for two sessions, and £22 1s. for one session. Reduced fees in the case of honours graduates who have taken their undergraduate course at the college.

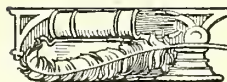
*Wandsworth Technical Institute*, High Street, Wandsworth, S.W.18.—Day and evening classes in chemistry, physics and botany. Fees: Day, according to course; evening, full course, 12s. 6d. (under eighteen); 15s. (eighteen to nineteen); 20s. (nineteen to twenty-one); 30s. (over twenty-one years of age).

*West Ham Municipal College*, Romford Road, E.15.—Day and evening classes for B.Sc. (London). Fees: day, £9 9s.; evening, Inter. B.Sc. course, £1 15s. Final B.Sc. course, £2 5s.

**ABERDEEN**.—*Robert Gordon's Technical College* includes a well-equipped chemical department. Day classes, £7 per term. Evening classes, from 7s. 6d. to 20s. per session.

**ABERYSTWYTH**.—*University College of Wales*.—Three or four year courses for degree in science.

**BANGOR**.—*University College of North Wales*.—Composition fees for a science student amount to £24 18s. per session, including registration and apparatus fees.



## Educational Information



**BARNSELY.**—*Technical College.*—Day courses for B.Sc. of Sheffield University and in fuel technology.

**BARROW-IN-FURNESS.**—*Technical College.*—Day and evening classes in chemistry, botany and physics; fees per session, day classes, £3 3s.

**BELFAST.**—*Queen's University.*—Complete courses in pure science and in applied science and technology.

**BIRMINGHAM.**—*University.*—Courses in pure science. *Central Technical College*, Suffolk Street.—Part-time day and evening classes in chemistry, botany, and physics. To degree standard. Classes leading to B.Sc. (Special) London and A.I.C. *Aston Technical College.*—Day and evening courses in chemistry and physics; sessional fees: day, 7s. 6d. to £3; evening, 7s. 6d. to £1.

**BLACKBURN.**—*Municipal Technical College.*—Day and evening classes are available in chemistry, physics, biology and botany. Day course for the Preliminary Scientific examination, full-time course, £10 10s.; evening classes in chemistry, physics, biology and botany.

**BOLTON.**—*Municipal Technical College.*—Evening courses in chemistry; fees, 5s. to 15s. per session. Part-time, day and evening courses, £1 1s. a session.

**BOURNEMOUTH.**—*Municipal College.*—Courses for B.Sc. London degrees in science and engineering. Evening classes in science and technology.

**BRADFORD.**—*Technical College.*—Day and evening courses for University of London degree examinations.

**BRIGHTON.**—*Technical College.*—Day courses for University of London degrees in arts, science, engineering and pharmacy; also for the A.I.C. qualification. Fee: £24 for the session.

**BRISTOL.**—*University.*—Degree courses for B.Sc. (fee, £31 10s.), M.Sc., Ph.D. and D.Sc. degrees.

**BURNLEY.**—Day and evening classes are held at the Municipal College in chemistry, physics and biology; fees, £1 1s. to £2 12s. 6d. per course (part-time); £6 6s. (full-time). (Head of Department: Dr. R. Cuthill, M.Sc., A.I.C.)

**BURY.**—Evening chemistry courses (extending over three years) cost 5s. to 10s. per session.

**CAMBRIDGE.**—*University.*—For particulars apply to the Registry.

**CORK.**—*University College.*—Courses for B.Sc. degree.

**DARLINGTON.**—*Technical College.*—Evening courses in chemistry, physics and biology, 20s. Afternoon course in practical and tutorial chemistry, 15s.

**DUNDEE.**—*University College.*—Day classes in botany, chemistry, physics, physiology, etc. *Technical College.*—Central Institution for eastern counties of Scotland for technical instruction.

**EDINBURGH.**—*University.*—Degree courses for B.Sc. *Heriot-Watt College*, Chambers Street (affiliated with the University of Edinburgh).—Day courses extending over four years for the diploma and associateship of the College in applied chemistry and the associateship of the Institute of Chemistry. The College is also recognised for the purposes of the B.Sc. degree in chemistry of the University of London. Certain courses in the College are also recognised for the purposes of the B.Sc. degree in technical chemistry of the University of Edinburgh. Sessional fees from £20 to £25.

**EXETER.**—*University College.*—Courses for the external degrees of the University of London, and for the A.I.C.

**GALWAY.**—*University College.*—A constituent college of the National University of Ireland. Courses leading to the B.Sc. and higher degrees.

**HALIFAX.**—*Municipal Technical College.*—Day courses in chemistry, physics and dyeing, £15 per session; evening classes, from 14s. to 20s. per subject.

**HUDDERSFIELD.**—*Technical College.*—Full-day and evening courses in chemistry, physics, botany, zoology, and technological subjects, including textiles and dyeing. Courses for Institute of Chemistry examinations. Sessional fees: Day, £12 12s. to £21; evening from 10s., according to requirements.

**HULL.**—*Municipal Technical College*, Park Street.—Day, B.Sc. (Lond.) and A.I.C. courses, £2 2s. to £10 per term; full-time day courses for pharmacists and dispensers, £2 2s. per term for Hull students. Special courses in agriculture, materia medica, oil extraction, paint and varnish manufacture.

**LEEDS.**—*University.*—Degree courses in science; composition-fee, £43.

**LIVERPOOL.**—*University.*—Degree courses in science.

**LIVERPOOL.**—*City Technical College.*—Day and evening courses for B.Sc. and M.Sc. Degrees of London University, and the A.I.C.; special courses for F.I.C.; and post-advanced courses.

**MANCHESTER.**—*Victoria University.*—Courses for B.Sc. degree in science. These include ordinary, honours and general honours courses. The degrees of M.Sc., Ph.D., and D.Sc. are conferred on graduates for research.

*College of Technology* also provides specialised instruction in applied chemistry, leading to the Manchester University degrees of B.Sc. Tech., M.Sc. Tech., and Ph.D., and to certificates in the Faculty of Technology. Evening courses are held for the A.I.C. examination.

*Tutorial College (Grime's).*—University and other courses in various subjects. Class and private tuition for preliminary examinations and revision courses for Preliminary Scientific examination for pharmacy students.

**NEWCASTLE-UPON-TYNE.**—*King's College (University of Durham).*—Degree course in pure science, fee: £35 per annum. Registration fee, etc., extra.

**NORWICH.**—*Technical College and School of Art.*—Full-time degree course in science and engineering. Part-time courses, day and evening, in science, commerce, engineering, boot and shoe manufacture, printing, domestic science, building trade subjects and art.

**OXFORD.**—*University.*—For particulars apply to the Registrar.

**PLYMOUTH AND DEVONPORT.**—*Technical College.*—Day and evening courses for B.Sc. London, and less advanced classes in scientific subjects. Sessional fees: Day, £18 15s. to £25; part-time day classes or evening classes, £4.

**PORTSMOUTH.**—*Municipal College.*—Instruction in science and in technological subjects. Fees, £2 2s. to £8 8s. per term for full-time day courses; 7s. 6d. to 35s. per session for evening courses.

**PRESTON.**—*Harris Institute.*—Full-time day course for Inter B.Sc. Evening classes for A.I.C., B.Sc. and National certificates.

**READING.**—*University.*—B.Sc. course, £35 per session. Evening classes in physics, chemistry and botany.

**ROCHDALE.**—*Municipal Technical School.*—Evening classes in chemistry and botany.

**ST. ANDREWS.**—*United College.*—Inclusive fee for courses of B.Sc. degree in pure science, £94 10s.

**SALFORD.**—*Royal Technical College.*—Three years' full-time day course in chemistry and applied chemistry for which a diploma, endorsed by the Board of Education, is awarded. Day diploma and evening courses are recognised by the Institute of Chemistry.

**SHEFFIELD.**—*University.*—Degree courses in science. The composition-fee for a three-year course is £105, payable in three annual instalments of £35.

**SWANSEA.**—*University College.*—Day courses are held for degrees in science. Composition fees for a full-time degree or diploma course in pure or applied science, £25 per session.


**WIGAN.**—*Wigan and District Mining and Technical College.* Principal: J. F. S. Ross, M.C., B.Sc., Ph.D.—Full-time day courses in chemistry and general science for Honours degree (B.Sc. London), College diploma, and A.I.C. Part-time day and evening courses for B.Sc., A.I.C., and National certificate.

## Optics


MANY chemists subsequent to passing the Qualifying examination of the Pharmaceutical Society obtain an optical diploma with a view to practising as an optician as well as a pharmacist. Large sums of money are being spent on optical benefit under National Health Insurance, but almost without exception the optician is required to possess a diploma granted by one of the recognised examining bodies. In fact, it cannot be too strongly urged that an effort should be made to pass one of the examinations of the highest standard, as the knowledge gained will be of great value in dealing with patients. If possible chemists should take the full-time course at one of the schools mentioned below. Matriculation or equivalent standard of preliminary education is required by one examining body. Scholarships are available at the Northampton Polytechnic Institute, London, and to students about to prepare at certain centres for the examinations of the British Optical Association.

### Diploma Schemes

THE BRITISH OPTICAL ASSOCIATION, 65 Brook Street, London, W.1, conducts a Preliminary, a Dispensing, a Fellowship, an Honours, and an Orthoptics examination, the first-named being in general education and the others in optics. No candidate will be accepted for the Fellowship examination who has not previously passed the Preliminary or an examination of matriculation standard. Fellowship candidates, prior to examination, must submit evidence of at least 500 hours' training in mechanical and technical optics, 100 hours' clinical training, and attendance at an approved course in clinical experience specifically arranged with abnormal or pathological subjects at a recognised institution, and prior to certification of twelve months' employment or business training with an approved optical firm or optician. The examination fees are:—Prelimin-



## Educational Information



ary, £2 12s. 6d.; Dispensing, £2 2s.; Fellowship, £10 10s.; Honours, £5 5s. The Preliminary examination is held annually and the Fellowship and Honours examinations are held twice yearly. The full prospectus, together with a list of the approved institutions, may be obtained from the secretary.

THE NATIONAL ASSOCIATION OF OPTICIANS has instituted a Fellowship Diploma scheme, examinations for which are held three or more times a year, usually at Birmingham, Liverpool and Glasgow or Edinburgh. Candidates must present certificates of approved preliminary education. They must also provide evidence of practical experience in optical work and of attendance at an approved course of study. Pharmacists, subject to certain conditions, are at present exempt from the First examination. The fees are £3 3s. for the First and £5 5s. for the Final. Chemist-opticians on the O.B.A.C. List are invited to apply for membership. The examination syllabus and entrance forms may be obtained from the Secretary, N.A.O., 130 Princes Road, Liverpool, 8.

THE SCOTTISH ASSOCIATION OF OPTICIANS holds its examination at various centres in Scotland. The syllabus is obtainable from the secretary, 1014 Argyle Street, Glasgow.

THE WORSHIPFUL COMPANY OF SPECTACLE MAKERS holds its examinations (a) Fellowship, (b) Honours, in London twice yearly and occasionally in the provinces. The former is divided into four parts: candidates over the age of seventeen years may enter for Part I, but not for Parts II, III and IV until they have attained eighteen years. The diploma cannot be taken up before the age of twenty-one. No candidate is passed in any section of Parts II, III and IV unless he has satisfied the examiners in Part I. The Honours examination is open to those who have passed the Fellowship examination at least twelve months previously, and is a more advanced test for those who are interested in the fundamental principles of their work. The fees are as follows:—Fellowship: Part I £4 4s., Part II £4 4s., Part III £2 12s. 6d., Part IV £1 11s. 6d.; Honours, £5 5s. Full particulars of the examinations may be obtained from the Clerk to the Company, 36 Fumival Street, London, E.C.4.

### Optical Instruction

The following are among the principal schools where the necessary instruction in preparation for the examinations may be obtained:—

NORTHAMPTON POLYTECHNIC, St. John Street, London, E.C.1. —The courses provided by the Department of Applied Optics are organised in two divisions, namely (1) for ophthalmic and dispensing opticians and (2) for optical engineers, optical instrument makers, glass workers and spectacle makers. In the ophthalmic section complete theoretical, practical, clinical and workshop training is provided, by means of day courses and evening courses, in well-equipped laboratories, workshops and clinics. The courses (full- and part-time) cover the requirements for the Fellowship and Honours examinations of the S.M.C. and B.O.A. Scholarships tenable at the two-years' full time day courses are offered by the Worshipful Company of Spectacle Makers, the Aitchison Memorial Fund and the Governing Body of the Polytechnic; the British Optical Association offers scholarships tenable in the day or evening courses. The prospectus and full particulars will be sent on application to the secretary.

THE SCHOOL OF OPTICS, LTD., 2 Guilford Place, London, W.C.1, prepares students for all of the recognised qualifying examinations. It is well fitted up and thorough training is given. The complete full-time course of from six to twelve months' duration, according to the individual requirements of the student (fee £31 10s.), which commences in May and November of each year, covers the entire syllabus of all the recognised examinations. The part-time combined course (fee £14 14s.), which can be commenced at any time, consists of homework by correspondence, supplemented by classes held during the month preceding the examination, and on Wednesday and Thursday afternoon of every week. The School is fully recognised by the British Optical Association for mechanical, technical and clinical training, and clinical experience.

BRITISH OPTICAL INSTITUTE, LTD., Fern Lodge, 47 Grove-way, Brixton, London, S.W.9.—Full-time, part-time and

correspondence courses are provided. Full courses cover the entire syllabus of each optical examination. Afternoon classes and clinic, at which both normal and abnormal cases are dealt with, are held all the year round on two days a week in order to enable students to carry out all branches of practical work. Evening classes are held during the three months and daily revision classes during the month preceding each London examination of the B.O.A. and S.M.C. There has also been arranged a correspondence course which is recognised as part of the 600 hours' mechanical and technical training required by the regulations of the British Optical Association. The Institute is a recognised training centre for all sections of the Fellowship examinations in connexion with the regulations of the B.O.A.

REFRACTION HOSPITALS.—The lectures and demonstrations arranged in connexion with the granting of the hospital certificate commence in October. The subjects include physiology, pathology, embryology, methods of examination, use of drugs and hospital routine. Post-graduate students in ophthalmic optics may attend the hospital without taking the examination. The three hospitals have been recognised by the British Optical Association for clinical experience. The London and Glasgow Hospitals now give complete optical training for the S.M.C. and B.O.A. examinations. Full particulars can be obtained from 58-60 Newington Causeway, London, S.E., or 51 St. Paul's Street, Leeds, or 26-28 Richmond Street, Glasgow, C.1.

MR. C. A. SCURR, F.S.M.C., F.B.O.A., chemist and druggist, 50 High Street, Barnet, prepares candidates for the foregoing examinations. The courses, being mainly correspondence, are particularly suitable for those desiring an optical qualification by spare-time study. The practical work is usually performed during a visit to London, when the practical and revision classes are held, just prior to the examination. The fees vary from £6 6s. to £10 10s., according to the examination.

CENTRAL TECHNICAL COLLEGE, Suffolk Street, Birmingham, has three-year part-time courses, which meet the requirements of the British Optical Association and the Spectacle Makers' Company. Head of department of mathematics and physics, H. B. Keene, D.Sc., F.I.P.

CARDIFF TECHNICAL COLLEGE is providing a course of training for students who intend to become ophthalmic or dispensing opticians. The full course extends over two years, covering the ground required for the Honours and Fellowship examinations of the British Optical Association and other examinations of a similar character such as those of the Worshipful Company of Spectacle Makers.

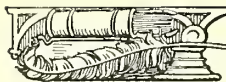
LIVERPOOL CITY TECHNICAL COLLEGE holds courses in applied optics, general optics and physiology of vision, which meet the requirements of the Spectacle Makers' Company.

MUNICIPAL COLLEGE OF TECHNOLOGY, Manchester, provides a full-time day course in applied optics extending over a period of two years. Candidates are required to pass an entrance examination (unless they have passed an approved equivalent examination), on which also a British Optical Association scholarship of the value of £40 per annum is awarded. The College also conducts evening classes which cover the examination syllabuses of, and which are recognised by, the British Optical Association at which Robert Sutcliffe scholarships are tenable. In addition, there are advanced special classes for the B.O.A. Honours examination, special workshop classes in optical craftsmanship, and provision for research work.

NORTH STAFFORDSHIRE TECHNICAL COLLEGE, Stoke-on-Trent, is a recognised institution under the British Optical Association's regulations for mechanical, technical and clinical training.

RUTHERFORD TECHNICAL COLLEGE, Newcastle-upon-Tyne, conducts courses of lectures and laboratory work designed to meet the requirements of students preparing for the B.O.A., S.M.C. and similar examinations. The full training extends over three years (three evenings per week) and the fees range from 30s. to 35s.

WEST HAM MUNICIPAL COLLEGE, Romford Road, Stratford, London, E.15, holds classes in pure and applied optics, suitable for ophthalmic, dispensing and instrument opticians, and cover the syllabuses of the optical examinations. The College



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is recognised by the British Optical Association for mechanical and technical training. Apply for prospectus and other particulars to the Principal.

SWANSEA MUNICIPAL TECHNICAL COLLEGE is providing a part-time course in optics, particulars of which will be sent on application.

THE INSTITUTE OF CHEMISTS-OPTICIANS, 285 Brompton Road, London, S.W.3, conducts a postal and practical course in optics, the fee being £6 6s. The Institute also conducts an examination for which the fee (if the five sections are taken at one time) is £4 4s. The prospectus may be obtained on application from the secretary, Mr. J. J. Laws, at the above address.

THE COLLEGE OF OPTICS, 133 Trongate, Glasgow, C.1, conducts full-time, part-time and postal courses. Principal: Mr. T. S. Baird, F.S.M.C., F.R.M.S.

GLASGOW SCHOOL OF OPTICS, 300 West Princes Street, Glasgow, C.4, provides part-time and postal tuition suitable for the examination of the leading optical examining bodies. Details may be obtained from the Principal, Mr. M. H. Stone.

HERIOT-WATT COLLEGE, Edinburgh, provides a full-time day course in ophthalmic optics extending over two sessions in preparation for the examinations of the British Optical Association and the Worshipful Company of Spectacle Makers. This course has been recognised by the former body for mechanical, technical and clinical training.

## Veterinary Surgery

To practise as a veterinary surgeon it is necessary to possess the membership diploma of the Royal College of Veterinary Surgeons (10 Red Lion Square, London, W.C.1). This College is an examining body, so that professional education must be obtained at one of the affiliated veterinary colleges. Examinations are held simultaneously in London, Liverpool, Edinburgh, Glasgow and Dublin in July and December each year. The examination fee payable to the Royal College of Veterinary Surgeons is £6 6s. for each examination. Candidates referred in one subject pay a fee of £4 4s. for each re-examination. A student who desires to become a veterinary surgeon must attend college for at least five sessions of thirty weeks each, and pass five professional examinations. Prior to admission as a student he must pass an examination in general education entitling him to admission to a university.

### Veterinary Colleges

LONDON.—*Royal Veterinary College and Hospital* (founded 1791; incorporated 1875), Great College Street, Camden Town, N.W.1.—Educational fee for five years' course of instruction, £40 per annum, Students' Union fees amounting to £2 2s., and for those taking the B.Sc. degree in veterinary science of the University of London, additional fees totalling £21. The prospectus may be obtained on application to the secretary.

DUBLIN.—*Veterinary College of Ireland*, Shelbourne Road, Ballsbridge.—The College is conducted by the Department of Agriculture. The tuition fees amount to £25 for each session. Principal, Professor J. J. O'Connor, M.R.C.V.S. Particulars may be obtained from the Registrar.

EDINBURGH.—*Royal (Dick) Veterinary College*, Summerhall (founded 1823).—Class fees for complete curriculum amount to approximately £135. There is also a matriculation fee of 10s. 6d. and an athletic fee of 10s. payable by all students at the beginning of each session. Principal, appointment pending.

GLASGOW.—*Glasgow Veterinary College* (established 1862; incorporated 1909), Buccleuch Street, Garnethill.—Full particulars are obtainable from the secretary. Principal, Professor A. W. Whitehouse, M.A., M.R.C.V.S.

LIVERPOOL.—*The University Veterinary School* gives a university training for the M.R.C.V.S. and also for a veterinary

degree B.V.Sc. For the fees and complete curriculum application should be made to the Director.

A member of the Royal College who has been engaged in the practice of his profession for two years or upwards may present himself for examination for the diploma of Fellowship (F.R.C.V.S.). Veterinary science degrees are granted by several universities, including Edinburgh, Liverpool and London.

## Chiropody

A MEASURE of recognition has been accorded chiropodists by their admission to the National Register of Medical Auxiliary Services. Among the qualifications recognised as registrable are the Incorporated Society of Chiropodists and the British Association of Chiropodists, and other examining bodies are being investigated with a view to their recognition and admission to the Chiropody Group Council. Systematic training can be obtained from the institutions mentioned below.

Under the auspices of the INCORPORATED SOCIETY OF CHIROPODISTS, 21 Cavendish Square, London, W.1, which acts as an examining body, two-year courses are organised at the EDINBURGH SCHOOL OF CHIROPODY, GLASGOW AND WEST OF SCOTLAND COLLEGE OF CHIROPODY, LONDON FOOT HOSPITAL SCHOOL OF CHIROPODY (33 Fitzroy Square, W.1), and MANCHESTER SCHOOL OF CHIROPODY. Students successful in the examinations are eligible for membership of the Society (M.I.S.Ch.) as well as registration as Medical Auxiliaries, the Society being recognised by the Board of Registration of Medical Auxiliaries.

THE CHELSEA SCHOOL OF CHIROPODY (Chelsea Polytechnic). Two-year day and evening courses provide a complete preparation for the Chelsea Polytechnic Certificate in chiropody, which qualifies for membership of the Chelsea Chiropodists' Association (M.C.Ch.A.) and the National Register of Medical Auxiliary Services. Facilities for practical experience in public hospitals, institutions and school clinics. The School is subject to periodic inspection by the Board of Education and the London County Council and is the only School of Chiropody in the country under public control. Fees, £18 to £21 per annum.

NATIONAL SCHOOL OF CHIROPODY, associated with the Islington Free Foot Hospital, 133 Upper Street, Islington, London, N.1. A six-months' full-time course terminates with a graduating examination which qualifies the graduate to become a member of the National Institute of Chiropody and to use the letters M.N.I.Ch. on payment of the yearly subscription of £2 2s.

NATIONAL SCHOOL OF CHIROPODY, Manchester, is associated with the National School, Islington, to the courses and diplomas of which its own correspond.

SCHOOL OF SURGICAL CHIROPODY, 5 Smae Institute, Leatherhead, offers home courses leading to qualification for school certificate (M.S.S.Ch.).

THE BRITISH ASSOCIATION OF CHIROPODISTS, 80 Rochester Row, London, S.W.1, together with its qualifications, is recognised by the Board of Registration of Medical Auxiliaries.

CARDIFF ROYAL INFIRMARY.—The hundred and second annual report of Cardiff Royal Infirmary (of which Mr. Alec S. Johnson, J.P., M.P.S., is a member of the board of management and chairman of the Convalescent Home committee) shows a deficit for the twelve months of £1,412. The centenary fund of the Infirmary is also in need of immediate support in order to reach the requisite total.

DETECTION OF CARBON BISULPHIDE VAPOUR.—Leaflet No. 6 in the series issued by the Department of Scientific and Industrial Research on methods for the detection of toxic gases in industry deals with carbon bisulphide vapour (H.M. Stationery Office, 3d. net). It mentions the situations in works where this vapour may occur in dangerous concentrations, and outlines the effects which follow exposure to the vapour. It is stated that the permissible concentration of carbon bisulphide vapour in the atmosphere of workrooms should be kept well below one part in 30,000 of air, and preferably not above one part in 100,000.

# Trade Report

Where possible scales of prices of chemicals are given for bulk down to small quantities. Prices recorded for crude drugs, essential and fixed oils and coal tar products are for fair sized wholesale quantities. Qualities of chemicals, drugs, essential and fixed oils, etc., vary, and selected brands or grades would be at higher values

## 28 Essex Street, W.C.2, August 10

DURING THE FEW days the markets were open over the past week business has been on a minimum scale. The PHARMACEUTICAL CHEMICALS market shows no change of importance, with SANTONIN quoted by first-hands at the new Convention prices and MERCURIALS at the revised rates recorded last week.

### Crude Drugs

Business has been of modest account but values are fully steady with a number of items tending dearer. AGAR is firm at the further slight advance. CURAÇAO ALOES are very firm with no shipment offers. Shipment market for new crop CASCARA SAGRADA tends dearer. The first offers of Spanish-Portuguese new crop ERGOT are at high figures and the Polish commodity is also quoted at an advance forward. Japanese MENTHOL has been quiet; China reports good American inquiry for menthol from that source. The small stock of RHUBARB is quoted very strong. Shipment prices for new crop SENEGA tend to harden following the recent easier tone. Spot stocks of Madras and Rajapore finger TURMERIC are short and quoted dearer. Yellow grades of CARNAUBA WAX are in short supply and quoted at higher figures, spot and forward.

### Essential Oils

These products have met with a very limited demand of late but, in most cases, values are quite steady. ANISE (STAR) remains dull and values are slightly cheaper. Australian EUCALYPTUS is quoted dearer again for the higher grade oils and business continues quite good. Shipment offers of Sicilian LEMON are not attracting much business. A consignment of Californian cold-pressed oil arrived in London this week. Japanese PEPPERMINT has remained in quiet demand, with shippers' quotations slightly easier. WORMSEED is in short supply at the source and quoted at the recent advances.

### Exchange Rates on London

The following is a list of the chief Continental and other exchange rates at the opening on Thursday morning:—

Centre	Quoted	Par	August 3	August 10
Amsterdam ...	Fls. to £	12·107	8·78	8·78
Berlin ...	Mks. to £	20·43	11·66	11·66
Brussels ...	Belgas to £	nominal	27·55	27·55
Copenhagen ...	Kr. to £	18·159	22·40	22·40
Lisbon ...	Esc. to £	110	110	110
Madrid ...	Ptas. to £	25·24½	nominal	nominal
Milan ...	Lire to £	92·46	89	89
Montreal ...	Dols. to £	4·86½	4·68	4·68
New York ...	Dols. to £	nominal	4·68½	4·68½
Oslo ...	Kr. to £	18·159	19·90	19·90
Paris ...	Fr. to £	124·21	176½	176½
Prague ...	Kr. to £	164·25	nominal	nominal
Stockholm ...	Kr. to £	18·159	19·40	19·40
Warsaw ...	Zloty to £	43·38	24½	24½
Zurich ...	Frs. to £	25·2115	20·75	20·74

Bank rate 2 per cent.

### Pharmaceutical Chemicals, etc.

The usual quietness is reported in these markets over the holidays. Quotations show no change of importance.

ACETANILIDE.—Steady, quiet: B.P. crystals and powder quoted at 1s. 7d. to 1s. 10½d. per lb., as to quantity.

AMIDOPYRINE.—Dealers' prices are keen: crystals, two cwt., 9s. 4d.; one cwt., 9s. 8d.; less than one cwt., 10s. per lb., with powder 2½d. per lb. extra.

BROMIDES.—Makers' scales of prices unchanged: POTASSIUM, B.P., five cwt., 1s. 8d.; one cwt., 1s. 9d.; 28 lb., 2s. per lb. SODIUM, B.P., five cwt., 1s. 10d.; one cwt., 1s. 11d.; 28 lb., 2s. 2d. per lb. AMMONIUM, B.P., five cwt., 1s. 11d.; one cwt., 2s.; 28 lb., 2s. 3d. per lb. net. Resale clause applies, 28-lb. parcels and one-cwt. cases free. Smaller quantities than 28 lb. at higher prices. Export quotations are maintained as follows: POTASSIUM, B.P., five cwt., 1s. 4d.; one cwt., 1s. 4½d. SODIUM, B.P., five cwt., 1s. 5d.; one cwt., 1s. 5½d. AMMONIUM, B.P., five cwt., 1s. 6d.; one cwt., 1s. 7d. per lb., f.o.b.

BUTYL CHLORAL HYDRATE.—Occasional inquiry: spot, 14 lb., 8s.; 7 lb., 8s. 3d.; 1 lb., 8s. 6d. per lb., in 1-lb. bottles.

CAFFEINE.—The scale of prices for Continental material continues steady, as follows: PURE: bricks, less than 56 lb., 9s. 9½d.; 56 lb., 9s. 7½d.; one cwt., 9s. 5½d. per lb. Powder, less than 56 lb., 10s. 1d.;

56 lb., 9s. 11d.; one cwt., 9s. 9d. per lb. Anhydrous powder, less than 56 lb., 10s. 6d.; 56 lb., 10s. 4d.; one cwt., 10s. 2d. per lb. CITRATE: less than 56 lb., 6s. 6½d.; 56 lb., 6s. 5½d.; one cwt., 6s. 4½d. per lb., delivered United Kingdom, duty paid. Cases and 5-lb. tins free.

CHLORAL HYDRATE.—Makers' prices steady: duty-paid crystals, in 14-lb. free containers, five cwt., 3s. 2d.; one cwt., 3s. 3d.; 28 lb., 3s. 4d. per lb.; 28-lb. jars one penny per lb. extra.

CREAM OF TARTAR.—Unchanged: British material, 99 to 100 per cent., 92s. per cwt., less 2½ per cent. discount. Dealers' prices for foreign material competitive.

MERCURIALS.—Makers' prices continue at the reductions for calomel and powder corrosive sublimate recorded last week:

	Less than 28 lb.	Not less than 28 lb.	Not less than 112 lb.
Ammoniated Lump B.P. (White Precip.) ...	per lb. s. d. 6 10	per lb. s. d. 6 6	per lb. s. d. 6 5
Ammoniated Powder B.P. ...	7 0	6 8	6 7
Bichloride Lump B.P. (Corros. Sub.) ...	6 1	5 9	5 8
Bichloride Powder B.P. (Corros. Sub.) ...	5 6	5 2	5 1
Bichloride Powder B.P. ...	5 9	5 5	5 4
Subchloride B.P. (Calomel) ...	6 7	6 3	6 2
Red Oxide Cryst. B.P.C. (Red Precip.) ...	7 11	7 7	7 6
Red Oxide Levig. B.P.C. ...	7 5	7 1	7 0
Yellow Oxide B.P. ...	7 3	6 11	6 10
Persulphate White ...	7 0	6 8	6 7
Sulphide Black (Hyd. Sulph. cum. Sulph. 50%)	6 11	6 7	6 6

Net prices. Strictly without engagement. On usual terms. Special prices for larger quantities and for contracts.

QUININE SALTS.—Convention prices continue steady: sulphate, 2s. 3d.; bisulphate, 2s. 3d.; ethyl carbonate, 2s. 11d.; salicylate, 2s. 11½d.; hydrochloride, 2s. 10d.; dihydrochloride, 3s. 1½d.; hydrobromide, 2s. 10d.; dihydrobromide, 3s. 1½d.; valerianate, 3s. 9½d.; phosphate, 3s. 5½d.; hydrophosphate, 4s. 1½d.; alkaloid, 3s. 1½d. per oz., 100-oz. tins free, carriage paid on bulk quantities.

SANTONIN.—The new convention prices are unchanged: World sales are being operated from Stockholm. The scale of sales prices is as follows: not less than 15 kilog. and over, 80 American dollars; not less than 10 kilog., 82 dollars; not less than 5 kilog., 85 dollars; and less than 5 kilog., 88 dollars per kilog. ex stock, Stockholm. Surcharges for small packages and for c.i.f. quotations.

THEOBROMINE.—The scale of prices for Continental material unchanged, as follows: pure, less than 56 lb., 8s. 8½d.; 56 lb., 8s. 6½d.; one cwt., 8s. 4½d. per lb. Soda sal., less than 56 lb., 6s. 10d.; 56 lb., 6s. 9d.; one cwt., 6s. 8d. per lb.; delivered United Kingdom, duty paid. Cases and 5-lb. tins free. Smaller packing extra.

THYMOL.—Synthetic, fine white, one cwt., 6s.; 56 lb., 6s. 4d.; 28 lb., 6s. 9d.; less than 28 lb., 7s. 6d. per lb., tins extra; ex ajowan seed, one cwt., 8s. 5d.; 56 lb., 8s. 10½d.; 28 lb., 9s. 5d.; 14 lb., 10s. 6d. per lb.

### Crude Drugs, etc.

AGAR.—Not much business moving except a little re-export trade. Values are dearer spot and forward, and continue firm: spot, Kobe, No. 1, 5s. 1d. to 5s. 4d.; Kobe, No. 2, from 4s. 11d. to 5s.; and Yokohama, No. 1, 4s. 10d. to 4s. 11d. per lb., ex store, duty paid. Shipment, Kobe, No. 1, 4s. 7½d.; No. 2, 4s. 6d.; and Yokohama, No. 1, 4s. 5½d. per lb., c.i.f.

ALOES.—Very firm on spot, and it is difficult to get offers; bids of about 187s. 6d., c.i.f., might be accepted: Curaçao, spot, black smooth capey, from 197s. 6d. up to 215s. per cwt. for fair livers; shipment, no firm offers recently, last 192s. 6d., c.i.f. Cape, spot, in boxes, 47s. 6d.; shipment, 43s. per cwt., c.i.f.

CASCARA SAGRADA.—No shipment offers coming through and prices tend to harden from the last value of 41s. per cwt., c.i.f., for minimum car-load lots: spot, steady, with 1938 bark, 52s.; 1937 bark, 57s. 6d.; and 1936 bark, 65s. per cwt., ex store.

CLOVES.—Remains dull, quoted unchanged: Zanzibar, spot, 8½d.; shipment, August-September, 7½d. per lb., c.i.f. Madagascar, in bond, 7½d.; shipment, August-September, 6½d. per lb., c.i.f.

The landings of Zanzibar in London during the week ended August 5 were nil, and the deliveries 62, leaving a stock of 695. From January 1 to date the landings of Zanzibar have been 1,774, and the deliveries 1,359. Landings of Madagascar for the week ended August 5 were nil, and the deliveries 19, leaving a stock of 724. From January 1 to date the landings of Madagascar have been 1,238 and the deliveries 1,007.

**COLCHICUM.**—Steady, small trade: root quoted at about 47s. 6d. per cwt., and seeds at 11d. to 1s. per lb., ex store.

**COLOCYNTH.**—Dealers' prices maintained: about 1s. to 1s. 1d. The source reports practically no pulp being brought in.

**DAMIANA LEAVES.**—Quoted unchanged: dealers quoting about 8d. per lb., as to quantity.

**DANDELION ROOT.**—Inquiry is small: good clean Continental root is available and quoted in the region of 65s. per cwt., ex store.

**ERGOT.**—Spot and forward continue very firm: Spanish-Portuguese, spot, 6s. to 6s. 3d., and in small supply; shipment, new crop, 6s. to 6s. 3d., c.i.f. Polish, spot, 4s. 1½d. to 4s. 3d.; shipment, new crop, 3s. 5½d. to 3s. 6d. per lb., c.i.f.

**GAMBOGE.**—Market is dull: cases of Siam pipe now available here, with minimum value £13 per cwt.

**GENTIAN.**—Small trade only: Continental root at about 28s. 6d. to 30s. per cwt., ex store.

**HONEY.**—Market remains slack: spot, Jamaican continues firm, with dark manufacturing 32s. up to 42s. 6d. per cwt. for pale set. Canadian, about 42s. to 45s. per cwt. Californian, white clover, 47s. 6d., duty paid. Small lots of all descriptions at higher prices.

**HYDRASTIS.**—Values are maintained at recent advances: U.S.P. spot, about 13s. 9d.; shipment, 13s. 4½d. per lb., c.i.f. High test root, spot, 14s. 9d. per lb., ex store.

**MENTHOL.**—The Japanese product has been dull: K/S brands, spot, 12s. 1½d. to 12s. 3d., as to seller; shipment, August-September, 10s. 3d. per lb., c.i.f. Chinese, spot, 11s. 3d.; shipment, August-September, 9s. 9d. per lb., c.i.f., with orders from America reported. French, duty paid, 10s. 6d.; shipment, 9s. 4d. per lb., c.i.f.

**MERCURY.**—Spanish-Italian metal continues steady: f.o.b. Continent, 76 dollars; c.i.f., London, £16 16s.; and ex store, London, £16 10s. per bottle.

**PEPPER.**—Market is steady, but rather dull: Lampong, in bond, 2½d.; shipment, August-October, 2d.; October-December, 2d., c.i.f. Tellicherry, spot, 4d.; shipment, August-October, 3½s., c.i.f. Aleppy, spot, 3½d.; shipment, August-October, 3½s., c.i.f. White Muntok, in bond, 3½d.; shipment, August-October, 3½d.; October-December, 3½d., c.i.f. London Terminal Market: Black, August, 2½d.; October, 2½d.; December, 2½d.; White, August, 3½d.; October, 3½d.; December, 3½d. per lb.

**RHUBARB.**—Continues firm and in restricted supply on spot: rough round fully 2s. 4d. and up to 2s. 6d. for best available. Shensi, small to medium, of poorish quality, 5s. 1½d. to 5s. 3d.; Shensi pickings, 4s. 3d. Canton pickings, a few cases only, 3s. 6d. per lb. A shipment offer of rough round, ordinary, from Hong Kong, at 2s. 2½d. per lb., c.i.f.

**SEEDS.**—**ANISE.**—Spot, duty paid, Spanish, 80s.; Bulgarian, 40s.; Russian, 41s. **CANARY.**—Market firmer. The latest prices quoted on spot, duty paid, are: Mazagan, 13s.; Morocco, 11s.; Turkish, 12s.; Plate, 11s. 6d.; Spanish, 34s. to 38s. 6d. **CARAWAY.**—Dutch, spot, duty paid, 46s.; 41s. quoted f.o.b. Holland. **CORIANDE.**—Morocco, spot, duty paid, 13s. 9d.; and 12s. 6d. in bond. For shipment (new crop), 10s. 9d., c.i.f., quoted. **CUMIN.**—Spot, Morocco, 42s. 6d., duty paid; shipment, Morocco, 36s. 6d., c.i.f., and Malta, 46s., c.i.f. **DILL.**—Indian, 11 per cent., 18s., spot. **FENNEL.**—Spot, Indian, 2 per cent., 32s. 6d., and Iran, 25s., in bond. **FENUGREEK.**—Spot, Indian, 12s. 6d.; Morocco, 11s. 9d., duty paid. **MUSTARD.**—English, 26s. to 33s. 6d., according to quality.

**SENEGA.**—It is now doubtful if the rather easier shipment offers of last week are available, and the market tends dearer; nominally 2s. per lb., c.i.f. On spot there are sellers at 2s. 4½d. to 2s. 6d. per lb., ex store.

**SHELLAC.**—Values maintained, market quiet: standard TN orange, 34s. to 37s.; August, 34s. 3d.; October, 35s. 3d.; fine orange, 52s. 6d. to 77s. 6d.; pure button, 45s. to 47s. 6d. per cwt. For arrival, TN, July-August, 35s., c.i.f.

**SLIPPERY ELM BARK.**—Routine spot demand: 5-lb. wired bundles, selected quality, about 1s. 4½d. to 1s. 5d. per lb., ex store.

**TRAGACANTH.**—With a limited sale prices continue unchanged: finest selected white ribbon, £60; No. 1, white, £55 to £57 10s.; No. 2, white, £50 to £53; No. 3, white, £35 to £42 10s.; amber leaf, £32; cleaned amber sorts, £16; brown to amber leaf, £11 10s.; red leaf, £9 to £10; hogg, £6 to £7 per cwt., ex store.

**TURMERIC.**—Spot stocks are now low and values are firm: spot, Madras finger, 31s. and Rajapore, 32s. 6d. Shipment, Madras finger, 27s. 6d., c.i.f.; Rajapore is not offered.

**WAXES.**—**BEES'.**—Values are about unchanged, market quiet: Dar-es-Salaam, spot, 100s.; shipment, 95s., c.i.f. Benguella, 90s., in bond; shipment, 85s., c.i.f. Conakry, 90s., in bond; shipment, 85s., c.i.f. Japanese, spot, 74s., duty paid; shipment, August-September, 58s. per cwt., c.i.f., for first three brands. Madagascar, F.d.e., 92s. 6d., duty paid; shipment, new crop, August-September, 77s. 6d., c.i.f. **CARNAUBA.**—Yellow grades in short supply and quoted dearer: fatty grey, spot, 142s. 6d.; afloat, 139s. 6d.; shipment, August-September, 137s. 6d., c.i.f. Chalky, grey, spot, 137s. 6d.; shipment, August-September, 135s., c.i.f. Primeira, spot, good quality, 200s.; shipment, August-September, 192s. 6d.; Mediana, spot, 187s. 6d.; shipment, 185s. per cwt., nominal.

## Essential and Expressed Oils, etc.

GENERALLY quiet markets are reported but values in most instances are very steady. Australian eucalyptus is selling well and forward prices for the higher grades are dearer. Sicilian lemon remains dull. Not much business in Japanese peppermint.

**ALMOND.**—Quoted unchanged; business quiet: English-made cwt. lots, 2s. 3d.; smaller parcels, up to 2s. 9d. per lb.; foreign, cwt. lots, 2s. 4½d.; smaller parcels, up to 3s. per lb. French bitter, 6s. to 6s. 1½d. per lb.

**ANISE (STAR).**—Market has been dull and quoted values are slightly easier: spot, leads, 3s. 3d.; tins, about 3s.; drums, 2s. 10½d. per lb., ex store; shipment, tins, 2s. 7½d.; drums, 2s. 6½d. per lb., c.i.f.

**AVOCADO PEAR.**—Business of small account: Californian oil is unchanged at 42s. 6d. to 50s. per gallon, as to quantity.

**BAY.**—Average small spot orders: cases, 4s. to 5s. per lb., as to quantity.

**BERGAMOT.**—Shipment quotations for Consortium oil are maintained at about 15s. per lb., c.i.f., in coppers. Spot values continue at about 15s. 3d. for genuine oil, with blended products at cheaper prices.

**BOIS DE ROSE.**—Continues steady, demand quiet: Brazilian, spot, drums, from 5s. 9d.; smaller lots, up to 6s. 3d.; shipment, 5s. 6d. per lb., c.i.f., in drums.

**CAJUPUT.**—Occasional small spot business: B.P., 1s. 10d. to 2s. 1½d. per lb., as to quantity.

**CEDARWOOD.**—Steady, but business is rather quiet; small spot demand: African, in drums, 11½d.; smaller packages, up to 1s. 4d. per lb. American, in drums, 11½d.; smaller packages, up to 1s. 4d. per lb., ex store.

**CITRONELLA.**—Dull with quotations nominally unchanged: Ceylon, spot, drums, from 1s. 6d.; smaller parcels, up to 1s. 9d.; shipment, drums, 1s. 0½d. to 1s. 1d. per lb., c.i.f., for bulk quantities. Java, spot, drums, about 1s. 7½d.; smaller parcels, up to 1s. 10½d.; shipment, drums, about 1s. 1½d. per lb., c.i.f.

**EUCALYPTUS.**—Good inquiry continues with spot and shipment quotations firm; only October shipment offered, with 80 to 85 per cent. dearer: Australian, 70 to 75 per cent., tins, 1s. 7½d.; drums, 1s. 7d.; 80 to 85 per cent., tins, 1s. 9½d. per lb., ex store, with higher prices for small lots; shipment, 70 to 75 per cent., tins, 1s. 6½d.; drums, 1s. 6d.; 80 to 85 per cent., tins, 1s. 8½d.; drums, 1s. 7½d. per lb., c.i.f.

**GRAPE-FRUIT.**—Occasional spot demand: Californian, 10s. 3d. to 11s. 6d.; Florida, 11s. to 12s. 3d. per lb., ex store, as to quantity.

**JUNIPER BERRY.**—Quoted unchanged, quiet: from about 3s. 3d. up to 4s. 3d. per lb., for limited quantities.

**LEMON.**—Shipment quotations for Sicilian oil continue in the region of 12s. to 12s. 3d. per lb., c.i.f., in coppers, with practically no inquiry from buyers. Spot business is also dull, but bulk quantities of branded oil might be taken at about 12s. 6d. per lb., for standard B.P. quality. Californian oil, distilled, regular quantity, is quoted unchanged at 1 dollar 29 cents per lb., landed, in small drums. Californian cold-pressed, in cases, 2 dollars 13 cents (about 9s. 1½d.) per lb., with supplies due to be landed this week.

**LIME.**—Fair amount of small orders, with quotations for West Indian distilled steady at 13s. to 14s. per lb., as to quantity and packing.

**ORANGE.**—Spot market steady: French Guinea, shipment offers are fully steady in the region of 2s. 4d. per lb., c.i.f. spot; good oil in drums about 2s. 9d. and up to 3s. 3d. for repacked lots. Californian, in small drums or two or more cases, 58 cents per lb., ex store.

**PALMAROSA.**—A modest spot supply is now being landed and is limited at about 9s. 3d. per lb., ex store. Shipments offers continue dear from 8s. 3d. per lb., c.i.f.

**PEPPERMINT.**—The Japanese product has been in very limited demand: spot, 4s. 5d. to 4s. 6d.; shipment, August-September, 4s. 1½d. to 4s. 3d., c.i.f. Re-sellers at 4s. 1d., c.i.f. Chinese, spot, 4s. 4d. per lb.; shipment is now more in line with spot values at 4s. 2d., c.i.f., with America interested in this source. American natural oil, in drums, is quiet: quoted at 2 dollars 10 cents to 2 dollars 25 cents per lb., c.i.f.

**PETITGRAIN.**—Values are steady, market quieter: spot, in cases, 3s. 4½d. per lb.; shipment, from 3s. 1½d. per lb., c.i.f., as to quantity.

**SANDALWOOD.**—Genuine East Indian Mysore, in one-case lots, steady at 20s. 6d. per lb., East Indian, produced outside the province of Mysore, 16s. 7½d. to 17s. 3d. per lb., c.i.f., in bulk quantities. English-made West Indian, 7s. 3d. per lb. Australian, steady at 15s. 3d. per lb. for 7-lb. tins, one case at 14s. 9d. and five cases at 14s. 6d. per lb.

**SPEARMINT.**—Not much inquiry, quoted unchanged: U.S.P. oil, spot, about 9s. 1½d.; shipment, 8s. per lb., c.i.f.

**TURPENTINE (AMERICAN).**—Market quiet, values slightly easier: London, 32s. 9d.; Liverpool, 34s. 6d.; Hull, 34s. London stocks on August 4, 17,584 barrels.

**WORMSEED.**—Continues firm and in short supply at the source: U.S.P., spot, 10s. 7½d.; shipment, 10s. 4d. to 10s. 5d. per lb., c.i.f.

# Commercial Notes

**Argentine Republic Sheep Dip Imports.**—Although there is a substantial local production in these lines, most of the demand is still supplied by imports, which in 1937 totalled 8,871 tons of sheep dips and 328 tons of tick killers, practically all of which came from the United Kingdom.

**Iraq Liquorice Root Exports.**—Shipments from Iraq during 1938 totalled 4,365,000 kilog., valued at \$87,000, against 6,569,000 kilog., valued at \$112,200 in 1937. Of the amount exported in 1938, a total of 4,323,000 kilog., valued at \$86,000, was destined for the United States, the remainder going to the United Kingdom and Belgium.

**Egyptian Bees' Wax Shipments.**—Exports of "bees' wax and wax of other insects," which consist almost entirely of bees' wax, amounted to 139,225 kilog., valued at £E.14,618, in 1938, compared with 126,909 kilog., valued at £E.14,958, in 1937. About 90 per cent. of the 1938 exports were shipped to the United States of America.

**Dutch East Indies Gum Exports.**—Exports of all gums in 1938 amounted to 24,770,246 gross kilog., valued at 3,682,676 guilders. Gum damar exports totalled only 6,940 metric tons in 1938, as compared with 10,613 tons for 1937. Gum copal shipments declined from 13,137 metric tons in 1938 to 10,697 tons in 1937. Gum benzoine exports declined from 5,914 metric tons during 1937 to 2,056 tons in 1938. The United States is the largest purchaser, taking 28 per cent. of the total gum exports from the Netherlands Indies.

**U.S.A. Menthol Imports.**—Arrivals, showing sources, during the past five years were as follows:—

Country of Origin	1934	1935	1936	1937	1938
	Lb.	Lb.	Lb.	Lb.	Lb.
Germany ... ..	15,002	17,255	14,820	18,250	20,700
Netherlands ... ..	1,219	160	5	98	15
United Kingdom ... ..	9,120	4,320	5,220	4,620	3,240

**German Medicinal Exports.**—Shipments to all destinations of pharmaceutical chemicals and medicinal products during the past four years were as follows:—

Statistical Group	1935	1936	1937	1938
Prepared medicines, proprietary articles ...	79,535	82,899	110,868	99,464
Non-prepared medicinal goods not specifically mentioned ...	12,901	13,239	14,180	12,675
Iodine salts (potassium sodium, ammonium iodide incl. also iodoform) ...	851	741	477	443
Bromine salts (potassium sodium, ammonium and iron bromides) ...	393	663	431	501
Chloroform, chloralhydrate ...	364	331	308	306
Liquorice juice, pectoral lozenges ...	83	76	86	75
Synthetic balsams, extracts (essences, tinctures and waters, not perfumed, for medicinal use) ...	919	1,102	1,250	1,169
Medicinal foods, such as iron albuminate, plasmon, sanatozen, somatose, tropon, pepsin ...	1,509	1,799	1,988	2,275
Quinine salts and compounds ...	8,246	6,552	6,613	6,678
Alkaloid salts, except quinine ...	3,783	3,624	3,584	3,141
Totals ...	108,584	111,026	139,785	126,727

All totals in thousands of marks.

**Egyptian Senna Exports.**—Shipments from the Sudan during 1937 and 1938 were as follows:—

Country of Destination	1937		1938	
	Tons	Egyptian £	Tons	Egyptian £
Great Britain ... ..	183	7,117	219	6,636
United States ... ..	226	5,516	253	4,899
Germany ... ..	15	1,180	42	1,762
France ... ..	9	281	7	252
Egypt ... ..	—	—	6	209
Belgium ... ..	—	—	2	57
Other countries ... ..	4	87	4	80
Total ... ..	437	14,181	533	13,895

Shipments consisted of the following:—

Item	1937		1938	
	Tons	Egyptian £	Tons	Egyptian £
Pods ... ..	171	8,582	164	6,707
Leaves ... ..	174	3,784	220	4,406
Siftings ... ..	92	1,815	149	2,782

**Netherlands Quinine Sulphate Exports.**—Shipments from Holland of quinine sulphate during 1938 totalled 497 metric tons, compared with 580 metric tons in 1937, and 653 metric tons in 1936. The chief destinations of the 1938 exports were the Soviet Union, Italy, United States, Greece, United Kingdom and the Belgian Congo.

**U.S.A. Ephedra Herb Imports.**—Arrivals, showing sources, during January–June and July–December, 1938, and January–March, 1939, were as follows:—

Country of origin	First half of 1938		Second half of 1938		1st quarter 1939	
	Lb.	\$	Lb.	\$	Lb.	\$
China ... ..	203,928	15,502	554,800	26,257	277,255	9,370
British India ... ..	446,350	29,197	—	—	—	—
Japan ... ..	161,518	10,808	186,850	13,946	—	—
Spain ... ..	9,485	544	—	—	—	—
Total ... ..	821,281	56,051	741,650	40,203	277,255	9,370

**U.S.A. Quinine Products Imports.**—Imports from all sources during the past five years were as follows:—

	1934		1935		1936		1937		1938	
	Unit	Value	Unit	Value	Unit	Value	Unit	Value	Unit	Value
Cinchona bark, lb.	1,690	\$ 668	1,618	\$ 631	2,051	\$ 745	1,836	\$ 761	1,349	\$ 588
Quinine Sulph., oz.	1,611	688	1,442	646	1,565	765	1,340	677	977	515
Other quinine and alkaloids and salts from cinchona bark, oz....	1,759	647	2,416	415	2,180	545	2,625	534	1,609	370

All totals in thousands.

**U.S.A. Peppermint Oil Imports.**—Imports, showing countries of shipment, during the past five years were as follows:—

Country of Shipment	1934	1935	1936	1937	1938
	Lb.	Lb.	Lb.	Lb.	Lb.
United Kingdom ...	50	332	328	500	696
Germany ... ..	—	141	—	199	125
Netherlands ... ..	—	75	77	218	113
Canada ... ..	—	10	—	—	—
China ... ..	—	6	40	15	—
Japan ... ..	—	—	1,511	1	17
Belgium ... ..	—	—	—	37	63
Hong Kong ... ..	—	—	—	31	—
Soviet Union ... ..	—	—	—	—	4,452
France ... ..	—	—	—	4	—
Total ... ..	50	564	1,956	1,005	5,466

**Hull Cod-Liver Oil Exports to America.**—The following quantities, with values of oil of all descriptions, was shipped from Hull during the first quarters of 1937, 1938 and 1939:—

## MEDICINAL COD-LIVER OIL

Month	March Quarter, 1937		March Quarter, 1938		March Quarter, 1939	
	Gallons	\$	Gallons	\$	Gallons	\$
January ...	13,085	8,028	34,588	26,480	58,334	35,311
February ...	8,724	5,723	14,730	11,677	35,033	18,310
March ...	22,345	15,688	46,104	35,350	29,769	15,001
Total	44,154	29,439	95,422	73,507	123,136	68,622

## POULTRY AND OTHER COD-LIVER OIL

Month	March Quarter, 1937		March Quarter, 1938		March Quarter, 1939	
	Gallons	\$	Gallons	\$	Gallons	\$
January ...	189,460	99,000	45,400	29,950	61,385	34,609
February ...	176,015	96,151	60,400	38,323	23,388	12,201
March ...	146,835	79,785	Nil	Nil	32,200	16,890
Total	512,310	274,936	105,800	68,273	116,973	63,700

## Correspondence

Correspondents may adopt an assumed name, but must in all cases furnish their real name and address to the Editor

### Medical Views

SIR,—In your issue of August 5, the letter of "Fair Play" (p. 175) connotes a marked divergence of views ascribed to two medical authorities. It seems, *ab initio*, an invidious task to attempt to correlate opinions apparently in conflict. Yet the inherent truth in each is somewhat obscured by the prejudice or partisanship concealed in a spaciousness which vitiates their respective views. The volumes of propaganda, the publicity agents, the private representatives and the radio recruited in the service of mercantile medicine bear conclusive testimony of the intensity of a campaign designed to eliminate every human ill, manifest or imagined. To this mass medication the speaker on whom "Fair Play" animadverted possibly and properly objects. To deny the potentialities of many preparations remotely or recently perfected is to oppose widely accepted fact. It is the multiple varieties of almost identical substances which confuse or confound the busy practitioner. One manufacturer may claim for his product a virtue stigmatised by his competitor as a vice. In the endeavour to achieve therapeutic perfection, the historic preparation of yesterday is discarded for *le dernier cri* of to-day. The passage quoted by your correspondent is, no doubt, true in the main. Medicine is much indebted to the manufacturers who with legitimate aspirations to commercial expansion combine the laudable and beneficial practice of intensive investigation into the aetiology, prevention and cure of disease. The trickle of profits and even the flood of capital are generously diverted into channels of scientific research. It would be interesting and informative to recount the conditions, formerly fatal, which now yield to medicaments inspired, invented and introduced by the silent service of the chemical and clinical laboratory. Our task, however, is often to sift the wheat from the chaff. The claims made for many of these modern medicines are clearly unsupported by clinical experience and exhibit in the advertisers an exuberance of imagination too palpable to establish conviction save—in respect of unconscionable misrepresentation—in the courts. Nor, in general, can it be said that the itinerary of the "representative" justifies the fare. The conjectured jargon of the clinic, deemed a *sine qua non* and ubiquitously assumed, however well rehearsed and recited, irks and irritates. Thus, while subscribing to the general views of "Fair Play," it is evident that more can be gained by unstimulated perusal of the literature than by the exhortations and heroics of the trade representative.—I am, Sir, etc.,

JOHN SHIEL,

L.R.C.P., L.R.C.S., L.M., Ph.C.,  
Barrister-at-Law.

Dublin.

### "Mixture" in Pharmacy

SIR,—Quincy's view of the nature of a mixture (*C. & D.*, August 5, p. 150) is of value as a milestone on the road of pharmaceutical nomenclature; and the superior convenience of the term seems to be the chief factor in the eventual discarding of the word "julep." The need in the eighteenth century for "mixture" or an alternative word is indicated by two further considerations: a draught was to be taken as a single dose (not exceeding ʒiij, according to the "Pharmacopœia Officinalis et Extemporanea"), and the prescriber might desire to order an unsweetened julep, which would have been a self-contradictory description. "Mixture" had not so definite a meaning at first. The earliest use of the word in England is probably in W. Harris's "De Morbis Acutis Infantum" (1689), on p. 121 of which "mixtura" (the alternative spelling of "mistura") is used for what would now be called a linctus, a liquid measuring about ʒiij, and directed "delingenda" (to be licked). In Thomas Fuller's "Pharmacopœia Extemporanea," which appeared in 1719, a year later than the book of Quincy's referred to, there are at least three different types of mixture—"An Acoustic Mixture" measuring ℥ 128 for use as ear drops, "A Bechic Mixture" for one dose, and "A Mixture with Bole" for two doses. (Quincy criticised some of Fuller's prescriptions, and Fuller retorted in the fourth edition (1730) of his Pharmacopœia.) John Allen, in his "Synopsis Medicinæ" (1733), wrote "M. F. Mistura" and "f. Mistura" without expressing any opinion as to the connotation of the word.—I am, etc.,

STUDENT (5/8).

## Miscellaneous Inquiries

We do not undertake to analyse and report upon proprietary articles nor to publish supposed formulas for them

*C. & A.* (26/7).—BANANA OIL.—This is the name given to amyl acetate, which is used as a solvent for lacquers and varnishes. The term is also used for a solution of pyroxylin in amyl acetate, which is employed with a bronze powder—usually aluminium bronze—as a bronzing liquid.

*R. V. C.* (2/8).—UNG. ANTISEPTICUM, MIDDLESEX FORMULARY.—A formula for this preparation appeared in Middlesex Formulary for 1926, but it should be noted that the publication has been out of use for some years. The formula is as follows:—

Ung. acid. carbol.	..	..	..	gr. 12½
Ung. acid. boric.	..	..	..	gr. 37½
Ung. zinci	..	..	ad	gr. 100

*I. J. C.* (4/8).—SYRUP OF LOBELIA.—The following is a compound syrup taken from "Pharmaceutical Formulas," Vol. II:—

Tr. lobeliae	..	..	..	50 gm.
Ext. senegæ liq.	..	..	..	20 gm.
Tr. zingib.	..	..	..	20 gm.
Aq. amygd. amar.	..	..	..	20 gm.
Spt. chloroformi (2 per cent.)	..	..	..	20 gm.
Tr. caryophylli (1 in 5)	..	..	..	5 gm.
Menthol	..	..	..	0.2 gm.
Diacetylmorphinæ hydrochloridi	..	..	..	0.6 gm.
Syrup.	..	..	..	864.2 gm.

*C. D. S.* (31/7).—ANT POISON.—The following formulas would seem suitable for your purpose:—

I				
Tartarated antimony	..	..	..	1 part
Sugar	..	..	..	2 parts

II				
Sodium fluoride	..	..	..	5 parts
Calcined sodium carbonate	..	..	..	1 part
Kieselguhr	..	..	..	4 parts

Sprinkle the powders on the anthills.

III				
Potassium carbonate	..	..	..	1 part
Water	..	..	..	9 parts
Honey	..	..	..	10 parts

Place on a plate and set it where the ants can readily reach it.

*D. E. A.* (31/7).—LINIMENT OF ZINC.—The following is the formula you require:—

Carbolic acid	..	..	..	2 parts
Zinc oxide	..	..	..	3 parts
Glycerin,	..	..	..	
Water	..	..	..	of each 47.5 parts

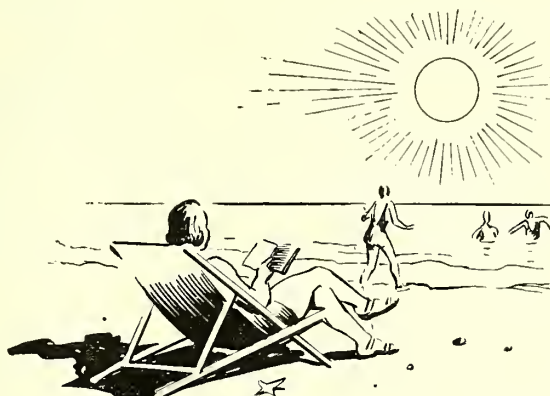
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"The Chemist and Druggist," August 10, 1889

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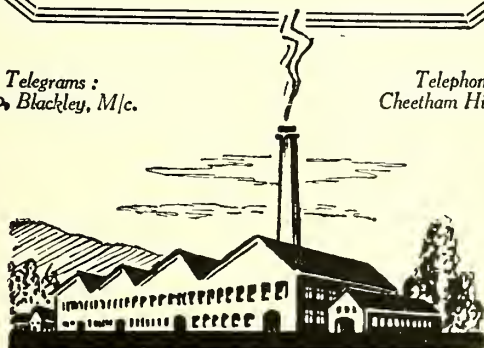
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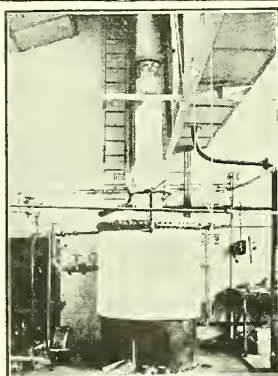
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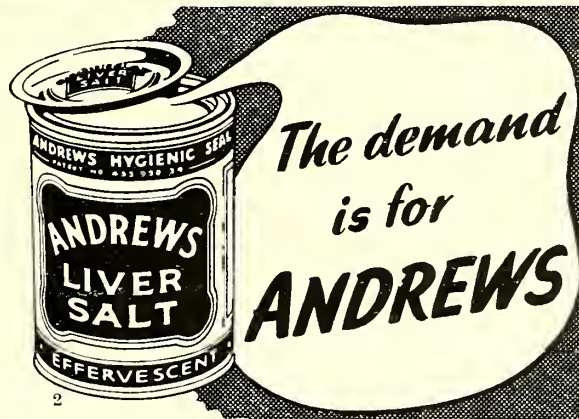


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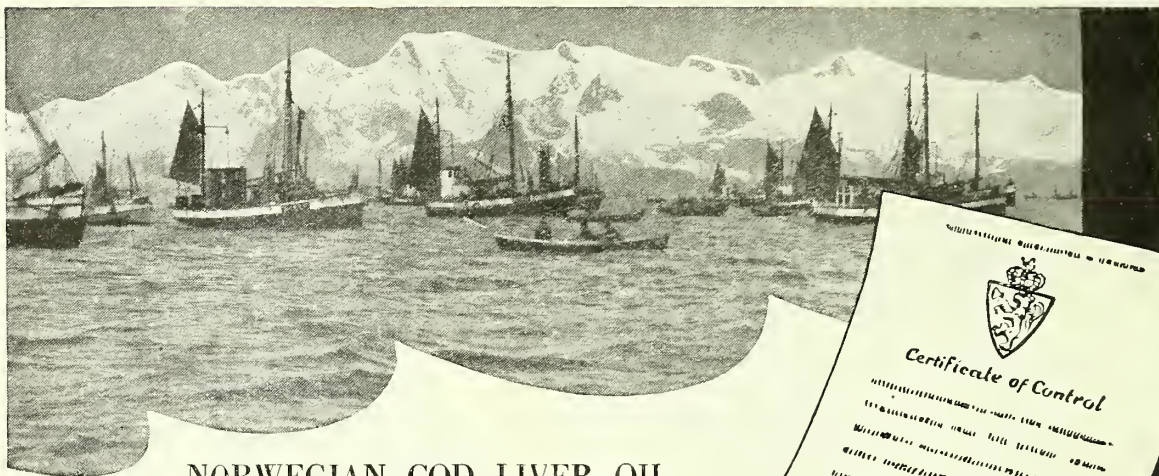
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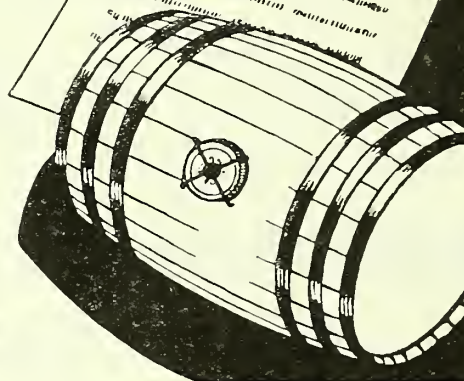
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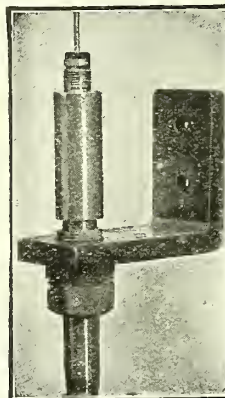
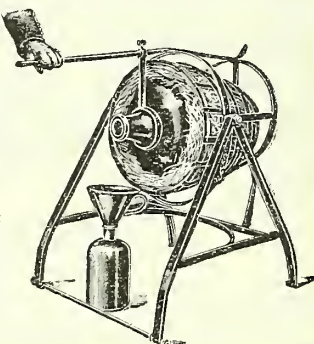
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